PACKAGE engineering

What to do when sampling crowds production

Devoting 65% of its packaging man hours to sampling for the professions, an ethical pharmaceutical producer is hard-pressed to get out production with the remaining 35% — involving short runs, many products. (See page 19)

Practical techniques of quality control

Applied to packaging line operations, quality control makes a distinct contribution to the improved control of package net weights and to worker efficiency on the lines. (See page 28)

Package development starts with product design

An effective packaging standardization program must be total, and must go all the way back to the standardization of product dimensions to assure uniformity of packaging. (See page 43)

Complete table of contents on Page 2

MAY 1957

VOLUME 2 • NUMBER 5

How to *Explore* new packaging techniques WITHOUT CAPITAL INVESTMENT

Package Research & Development

If your company is seriously thinking of designing new packages or is considering multiple-packs for super-market merchandising, here is a service that will save time, trouble, and money. Before investing in packaging machinery, let Berco set up a "pilot" operation and produce all the packaging required for market-testing.

Berco is ready to

- DESIGN BASIC PACKAGES
- PREPARE ART WORK FOR WRAPPER LAYOUTS
- SELECT PACKAGING MATERIALS
- DEVELOP SUPER-MARKET & HOLIDAY SEASON MULTI-PACKS

Remember: It's easier to select the "RIGHT" packaging machine "AFTER" a market-test !

BERCO

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Package Research & Development

BERCO is completely equipped with the SCANDIA line of Wrapping, Banding and Bundling Machinery.

BRONANDER ENGINEERING & RESEARCH CORP. • NORTH ARLINGTON, N. J.

For more information circle No. 201 on Reader Service Card

Aluminum Foil Packaging– Advantages of High Thermal Conductivity

Report No. 9 of a Series by Reynolds Metals Company

Thermal conductivity is a property often overlooked or considered of little consequence in the selection of packaging materials. Growth of the frozen and refrigerated foods industry, however, is placing increased emphasis upon the thermal properties of the package. Frozen foods producers are interested in faster and more efficient freezing. Grocers are interested in obtaining maximum efficiency from storage cabinets – which are frequently overworked. And, of course, the ultimate consumer is interested in rapid thawing or heating. The high efficiency of aluminum foil as a conductor of heat makes it unique among flexible packaging materials.

Both freezing and thawing can be speeded by aluminum foil's high thermal conductivity – by faster removal of heat from the package in air blast, plate or immersion freezing, and by faster transfer of applied heat into the package in thawing. On the other hand, where heat is conveyed by radiation rather than by contact, the high radiant heat reflectivity of aluminum foil will retard thawing rates.

Still other benefits are to be gained in storage situations where it is important to minimize temperature fluctuations. As an illustration, the accompanying graph shows the temperatures of ice cream in pint packages of waxed fiberboard cartons with and without aluminum foil overwraps.

©Reynolds Metals Company, Louisville, Kentucky

These packages were stored in an open top refrigerated display cabinet typical of those generally found in self-service markets.

It is a well documented fact that ice cream deteriorates rapidly through softening, shrinking and coarsening of texture if the temperature rises even a few degrees above its proper storage temperature. The most severe test of the packaging material, naturally, takes place in the top layer of the storage cabinet since exposure to radiant heat and convection currents is greatest at that point. Practical experience shows that ice cream in this location does, in fact, deteriorate most rapidly.

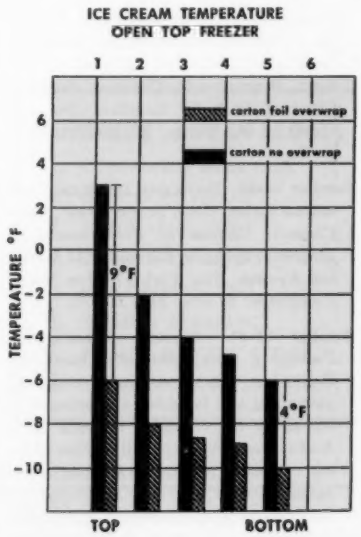
Test results shown in the graph indicate that, in this most exposed layer, the ice cream in foil wrapped cartons was held at 9°F *lower* temperature than ice cream in plain cartons on the same layer.

Even in the bottom layer, where radiation and convection are minimized, the temperature of foil wrapped ice cream was maintained at 4°F colder than ice cream in plain cartons.

Two properties of the aluminum foil wraps were responsible for maintaining these important lower temperatures. First, the great reflectivity of aluminum foil reduced the temperature rise due to radiant heat. Second, the high thermal conductivity of the aluminum permitted the gained heat to be conducted downward to the colder areas of the cabinet where it was effectively removed by the refrigeration equipment.

The absolute temperature values are not the significant point. What is significant is that the ice cream in plain cartons on the upper levels deteriorated while the foil wrapped ice cream on the same levels did not because lower temperatures were maintained.

Your local Reynolds representative will be glad to show you how aluminum foil packaging can best meet your individual problem. Or you may write direct to **Reynolds Metals Company,** General Sales Office, Louisville 1, Ky.



See "CIRCUS BOY", Reynold's new dramatic adventure series, Sundays, NBC-TV Network.

MAY 1957 • VOLUME 2 • NUMBER 5

PACKAGE engineering

AN ANGUS J. RAY PUBLICATION

For your calendar

May 6-8. American Management Association packaging clinic on export packaging, Sheraton-Astor Hotel, New York. Contact: John A. Warren, American Management Association, 1515 Broadway, New York 36, New York. Telephone: Judson 6-8100.

May 6. Akron-Canton Area Packaging Club meeting, American Legion building, Greentown, Ohio. Contact: J. E. Terrett, executive secretary of the club, Inland Container Corporation, 718 McKinley Ave., N.W., Canton, Ohio. Telephone: Glendale 2-9193.

May 12-16. Institute of Food Technologists annual meeting, William Penn Hotel, Pittsburgh. Contact: Charles S. Lawrence, executive secretary, Institute of Food Technologists, 176 West Adams Street, Chicago 3, Illinois. *Telephone: Andover 3-6268.*

May 15-17. American Management Association packaging clinic on equipment and materials for flexible packaging, Sheraton-Astor Hotel, New York. Contact: John A. Warren, American Management Association, 1515 Broadway, New York 36, New York. Telephone: Judson 6-8100.

June 12-14. American Management Association packaging clinic on preparation of new packaging for marketing, Sheraton-Astor Hotel, New York. Contact: John A. Warren, American Management Association, 1515 Broadway, New York 36, New York. Telephone: Judson 6-8100.

October 1-3. Third Joint Military-Industry Packaging and Materials Handling symposium, Fort Lee, Virginia. Contact: Procurement Division, Deputy Chief of Staff for Logistics, Department of the Army, Washington 25, D. C.

October 28-30. Packaging Institute, 19th annual forum, Hotel Statler, New York Contact: Charles A. Feld, executive director, Packaging Institute, 342 Madison Avenue, New York 17, New York. *Telephone: Murray Hill 7-8875.*

October 28-31. Society of Industrial Packaging and Materials Handling Engineers, 12th national industrial packaging and handling exposition and SIPMHE short course, Atlantic City Auditorium, Atlantic City, New Jersey. Contact: C. J. Carney Jr., managing director, Society of Industrial Packaging and Materials Handling Engineers, 111 West Jackson Blvd., Chicago 4, Illinois. *Telephone: Harrison 7-6123.*

Articles

19 **Packaging operations dovetail with sampling programs,** by John E. Slater, director of purchasing, A. H. Robins Company, Inc.
Since it uses 65% of its packaging man-hours for sampling programs, this company must do its production packaging in the remaining 35% and must handle a wide range of product and container variations.

23 **Seven steps to a new package,** by Walter A. Pisarski, packaging engineer, Alemite and Stewart-Warner Instrument Division, Stewart-Warner Corporation
In developing a new packaging for lubrication fittings, use of a seven step procedure permits dividing the project into its logical parts and taking them in sequence.

28 **Maintaining new weights through quality control,** by V. C. Bremer, quality control manager, C. F. Mueller Company
A practical discussion of quality control with special reference as to (1) just how it works on the packaging lines, and (2) how it contributes to the control of net weights of finished packages.

40 **Calculating stress pressures on walls of rigid containers,** by Raymond R. Haugh, chief applications engineer, Quartermaster Food & Container Institute for the Armed Forces
A quick, accurate way of calculating these stress pressures in pounds per square inch on walls of rigid, air-tight containers, due to temperature and pressure changes — with workable computers and examples of their use.

43 **A practical approach to packaging standardization,** by Darwin F. Kaestner, plant manager, Lakeside Laboratories, Inc.
Starting with the dimensional specifications of individual pharmaceutical tablets, the author took a packaging standardization program all the way through to final loading of cases prior to leaving the plant.

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64 **What we think** (our editorial page)

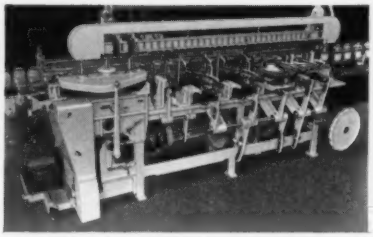
Reader service card inside back cover

Our December 1957 issue will carry a cumulative editorial index for the year listing our feature articles by subject, author, and other headings.

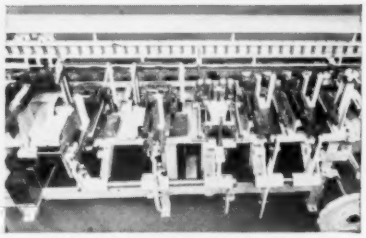
Low Cost MICRO-THIN Film Gives Top Performance With New PAISLEY "Controlled Tack" BOTTLE LABELING GLUES

MEASURING FILM THICKNESS of new Paisley High Speed Bottle Labeling Glues with modern Micrometric laboratory equipment.

TESTING COVERAGE of new Paisley non-crystallizing Bottle Labeling Glues with laboratory coating equipment.



PNEUMATIC SCALE'S 5' Duplex McDonald-type machine labels 150 jars per minute with speedy "Controlled Tack" Paisley Glue.



CLOSE-UP EXAMINATION of glue pots shows clean machining qualities of Paisley Glues at all speeds.

Save With These High Speed Bottle Labeling Glues

New Paisley Bottle Labeling Glues give TOP PERFORMANCE PLUS . . the PLUS is *COVERAGE* . . to step up production, cut costs. Scientific and practical plant tests show the low cost Micro-Thin film of these *"Controlled Tack"* Glues gives better adhesion at higher speeds on a wider variety of paper stocks. ★ Humidity resistance is assured through rigid checks . . each batch a minimum of 5 days at 100°F 90% R.H. as standard procedure! Non-crystallizing, these new Glues will bring new efficiency to your bottle and jar labeling operations . . new beauty to your packages, no matter what type of equipment you use. ★ May we trial-ship you a 5-gallon demonstration quantity at special drum price, right away?

SUPERIOR ADVANTAGES:

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8. *CUTS COSTS—CUTS WASTE*

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A note from the Publisher

While the titles of the men who receive PACKAGE ENGINEERING range from presidents and owners of companies on down, two general groups dominate our circulation. These two groups are the men concerned with packaging line production and the men concerned with package research and development.

All companies seem to be aware of what a production man is, and have a man, or group of men, whose primary concern is the packaging line. Not all companies are aware of the value of package research and development, however.

The company with a formal package research and development department is still in the minority, but all companies have a nucleus within their own organization that will be, or can be, developed into a package research and development department. This nucleus is sometimes called a complaint department, or perhaps it is a chemist or engineer who has been working with customers to solve packaging problems.

I think that all package research and development departments start out in the same way — to rectify customers' complaints. When management recognizes the fact that anticipating trouble before it happens may improve their competitive position through lower labor or material costs, or may result in package or product improvement, or an entirely new package — then the research and development department is born.

The leaders in the field today, and the companies who will be the leaders in the field tomorrow, already have R&D departments. This is true in both package-user and package-supplier plants. The average company can afford pure research, but if it has hopes of improving its competitive position, it must continually be alert to the many technical developments in the field and should strive continually to improve its package.

If you are dealing with a small supplier, he may not have a full-fledged package research and development department — but invariably there will be an individual in the company who has a lot of ideas for package improvement.

Frequently this man will be the one the supplier salesman brings along to help with a tough packaging problem, or to help smooth out complaints.

I have frequently mentioned in this column that price alone is a poor criterion on which to select a supplier. A supplier with a package research and development department — regardless of whether this price is above or below a supplier without this facility — will give you a tremendous competitive advantage in bringing to your attention new materials and techniques to do a better packaging job at less cost.

Angus J. Ray
Publisher

PACKAGE engineering

AN ANGUS J. RAY PUBLICATION

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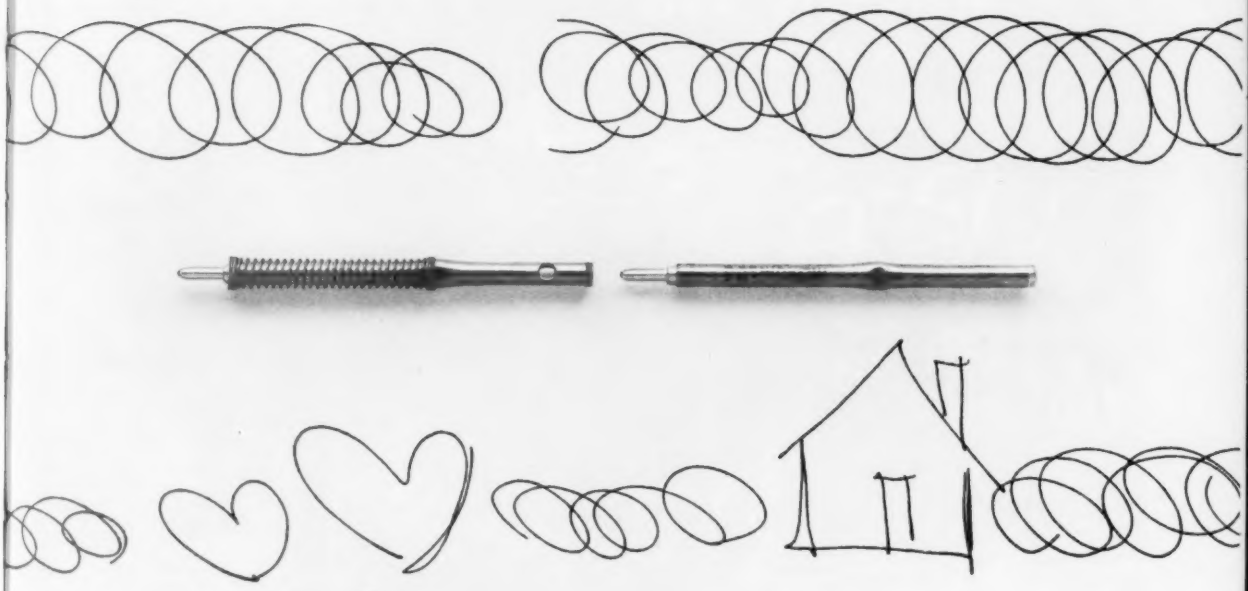

Dobeckmun Metalam® writes up faster sales for Paper-Mate.

For any product where protection, convenience and easy-to-read directions add up to sales appeal, a colorful package like this can make a tremendous difference. Firm and strong, yet easy to open, printed Dobeckmun Metalam solves many a selling problem, and probably yours. Get in touch with your nearest Dobeckmun representative or write Dobeckmun direct.

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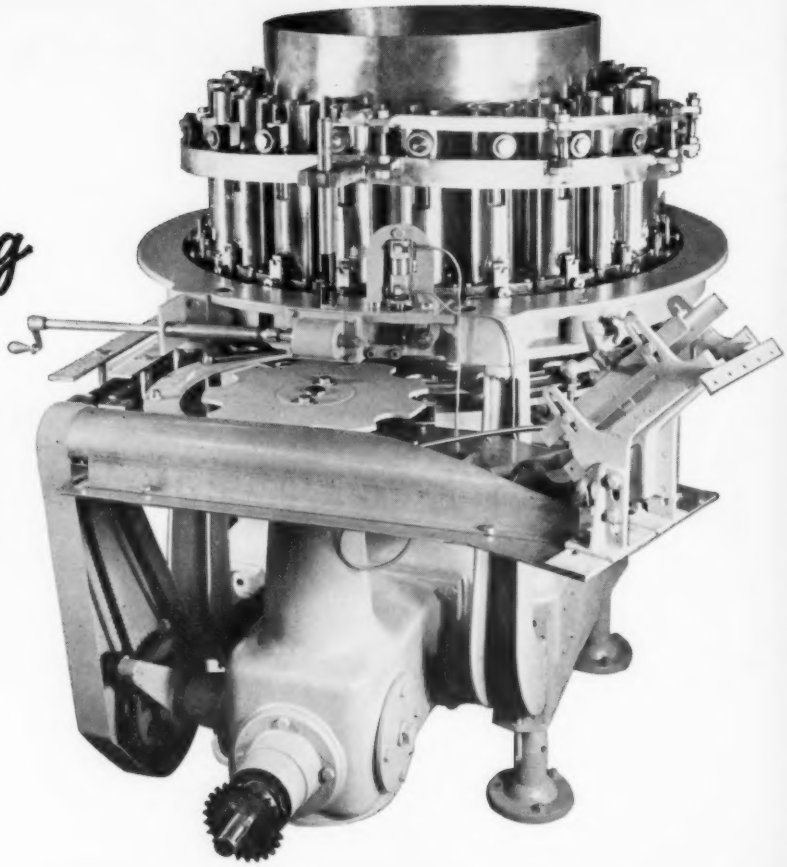
Announcing a NEW Pfaudler filler



Improved 21-station filling machine offers easier adjustment, greater accuracy than ever before

You can now package your viscous or semi-solid products with new speed and economy.

The new Model RPC-21 gives you smoother, uninterrupted production through 10 advanced design changes. They mean more accurate filling at higher speeds, easier filler control and reduced maintenance. All changes have been production-line-tested on millions of cans in one of the nation's largest canning plants.

So before you buy your next filler, consider these 10 important advantages:

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2. Feather - touch, non - abrasive, electro-pneumatic "no container-no fill" control.
3. New positive - positioning filler valve control, easily adjustable.
4. New adjustable, double-open-track container path through filler. Container tilt can be controlled to compensate for centrifugal force, preventing product throwout.
5. New accuracy-of-fill control mechanism, conveniently located for safe, easy, and quick adjustment.
6. Complete adjustment of fill through full range of cylinder without additional parts.
7. Precise synchronized transfer of filled container to auxiliary or to closing equipment.
8. Splined shafts throughout—no keys or pins to fail.
9. Access to all gears and shafts through base of filler.
10. New simplified changeover for different container sizes.

All Pfaudler fillers offer you many primary benefits—such as faster filling, low operating cost, easy cleaning, and accurate filling. For detailed information, contact your Pfaudler representative. Or, write to us direct.

THE PFAUDLER CO. Pfaudler **ROCHESTER 3, N. Y.**

(Doesn't attract dust either—only customers!)

Mrs. K. *knows* what she wants when she shops for fabric.

In store after store she pawed and clawed her way through bolt after bolt of rolled goods—ripping away wrappers, tearing her way through yard after yard while the saleslades cringed.

The result? No sale, and a lot of merchandise left to soil and spoil on the shelf.

BUT NOW Mrs. K. is an OK gal—she met her match in VITAFILM. You see this Goodyear film is tough and clear—lets customers *feel* the texture, *see* the true color of the merchandise right through the wrap!

MORAL: Wise fabric and ready-to-wear folk are beating the wrap of tough customers by wrapping their goods in VITAFILM or using any of a wide variety of VITAFILM bags or trayed overwraps—great contact clarity, machinability, transmits texture and color in a soft, flattering way.

BETTER CHECK INTO IT: Call in a Goodyear Packaging Engineer for the full story of all the big benefits of VITAFILM. Write or call, Goodyear, Packaging Films Dept. E-6432, Akron 16, Ohio.

P. S. The price? Best news of all!

Vitafilm a new GOODYEAR PACKAGING FILM

The Finest In *Sheer* Protection

The Greatest Thing Between You and Your Customer!

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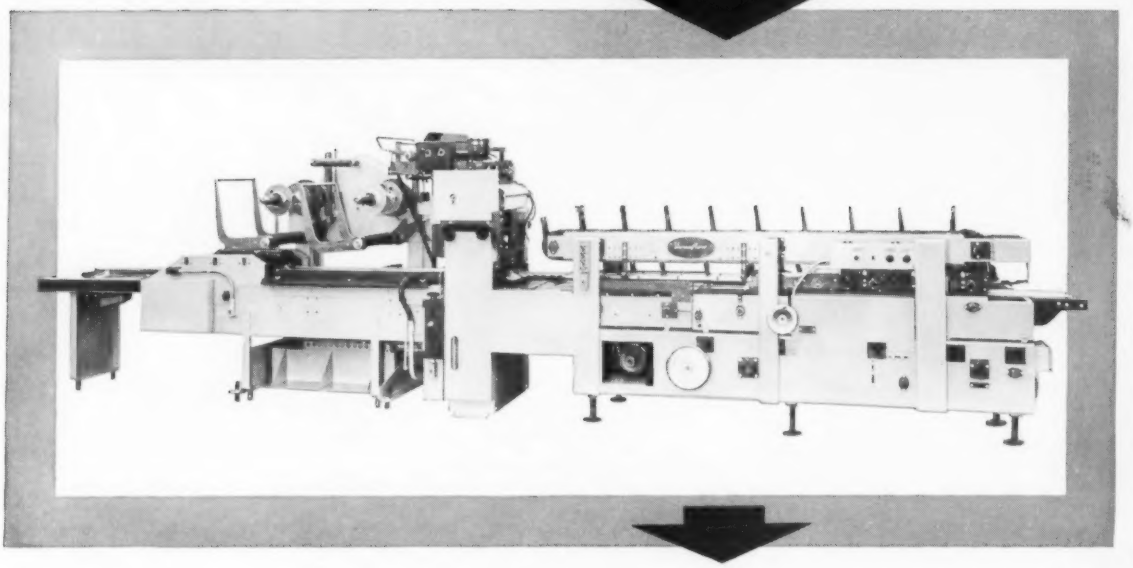
The Goodyear Tire & Rubber Company, Akron, Ohio

Only the new *Versaflow-150*



gives you straight-through packaging with no reciprocating motions

Here's another example of Package engineering leadership—the Versaflow-150. In the Versaflow, you will find an entirely new concept of handling over a wide size range. Packages move straight through the machine on a single level without changing direction. Continuous, uninterrupted speed, from infeed to discharge, assures gentle wrapping without upsetting package contents. There are *no* elevators, *no* reciprocating motions.

A special transfer feature on the Versaflow-150 enables you to feed directly from your production line. No direct drive hook-up is required. Belt infeed receives packages automatically, feeds them to the chain drive. Sealed ball bearings on all turning shafts eliminate maintenance, another Package 'plus' feature.

The Versaflow-150 will handle packages from 6" to 14" long, 3" to 7½" wide, 1" to 5" high. Variable speed drive permits operation up to 150 packages a minute. It wraps with cellophane, wax paper or heat-sealing foil. To get complete details, contact your nearest Package representative.

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If you package any of these products

you need A-C Polyethylene*

Paper products ranging from shipping cartons for refrigerators to containers for bulk potato chips and other greasy products can be packaged better with the help of A-C Polyethylene.

Yes, in virtually every type of container—whether they are cartons for food or furniture or glossy over-wraps for self service packages—the remarkable properties of A-C Polyethylene give you distinct improvements for your line, often at lower cost. For instance:

Furniture and appliances are protected from fiber scratch by the addition of A-C Polyethylene and wax as a coating on the corrugated board. Cut-paper or synthetic fabric liners are not required.

Food cartons are grease-resistant when a blend of A-C Polyethylene and wax is applied to the board. These packages are also water-resistant . . . an important factor in soap packaging.

Bread and food wrappers are glossier, far more resistant to scuffing when coated with A-C Polyethylene wax blends. Printing is more brilliant and the wrapper has excellent low-temperature flexibility.

Frozen food packages are now made resistant to grease penetration. The coatings will not flake, rub off or soak into the board. The blocking point is increased, an important factor for hot-filled products.

An extra profit advantage for you is that you can apply these coatings with your present waxing equipment. Many plants have used their older equipment for this new paper coating. Write in for information and technical assistance. If you wish, a technical representative will show you how your present equipment can produce new profits.

A-C Polyethylene

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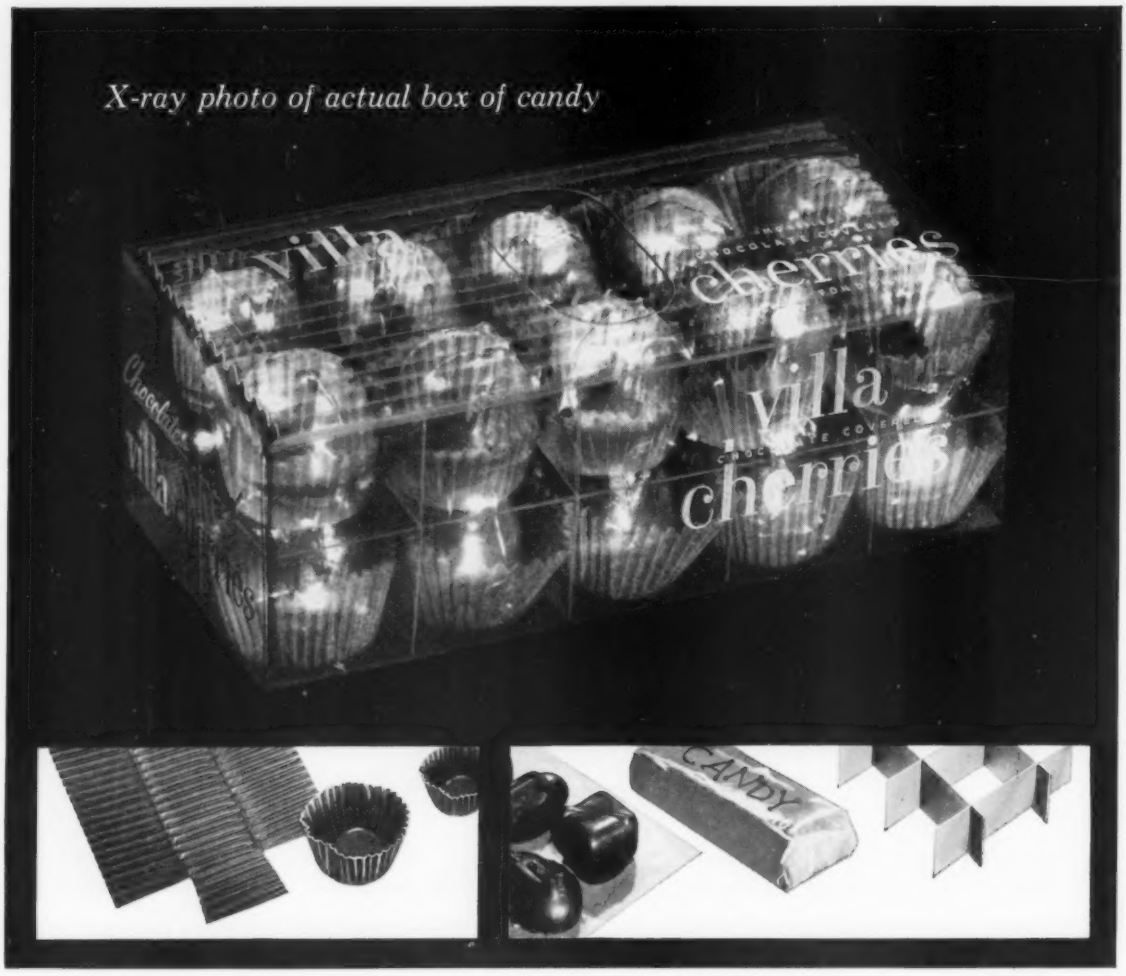

GLASSINE PAPER

The inside story on Protective Candy Packaging

Chocolate presents a tricky inside packaging problem. It has a high fat content which will stain and seep through ordinary papers. This will not occur, however, when layer pads, cups, and dividers are made of glassine. The inherent density of this Rhinelander paper is the reason.

Many candy bar wraps are made of Rhinelander glassine. Its glossy, rich appearance and smooth surface provide for excellent printing. Handles easily and economically on automatic packaging equipment. For added eye appeal, glassine is available in a wide variety of colors and in embossed, opaque, and translucent grades. Versatile glassine paper can fit your specific protective packaging requirement economically. Write for samples, stating application.

RHINELANDER PAPER

Rhinelander Paper Company, Rhinelander, Wisconsin

Subsidiary of St. Regis Paper Company

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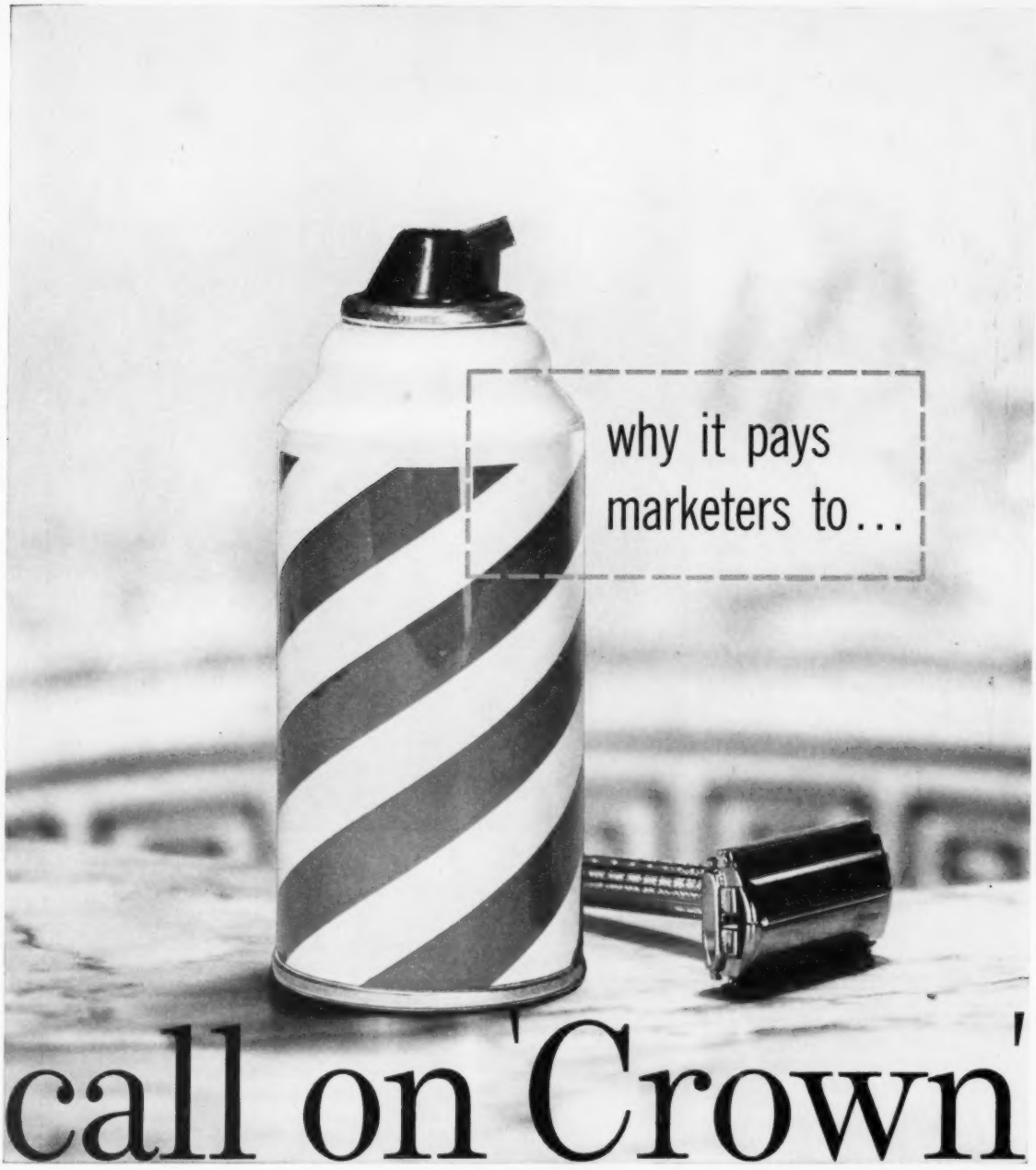

Spra-Tainer, the first "throw-away" pressure package, set new standards of design efficiency and convenience.

The extra strength of Spra-Tainer gives marketers a wider choice of propellants. Unique "no side seam—no top seam" construction permits uninterrupted inside coatings for best product protection. Crown's "wrap around" lithography gives marketers that vital extra spark at the point-of-sale.

Crown also provides authoritative facts on the adaptability of a product to pressure packaging . . . on pertinent Government and ICC regulations . . . on propellants, valves and contract loading facilities as well as the loading equipment itself.

You will find that this "one company responsibility" in pressure packaging pays real dividends when you . . . *call on Crown.*

CROWN CORK & SEAL COMPANY, INC., PHILADELPHIA 36, PENNA.

Packaging Engineers!

When thinking about polyethylene packaging—tubes, bottles or cans—let your BRACON representative help you with . . .

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- *Filling and Sealing Equipment*
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- *Printing Preparation*
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BRACON functional containers are used by over 300 manufacturers.

Sparks Sales . . . Lowers Cost

BRACON polyethylene tubes, bottles and cans are a merchandiser's dream! Consumers are readily attracted by sight and touch . . . enjoy their functional simplicity. Manufacturers find BRACON packaging economical . . . easy to handle and transport . . . marvel at superb printing that provides permanent product identity.

BRACON packaging is convenient . . . a gentle squeeze dispenses your product—liquid, cream or powder—just where it's wanted. Practical, too, because these flexible plastic containers will not dent, crack or break.

These fabricated tubes and bottles are a European development . . . perfected for mass production by Bradley Container. An entirely new container, the metal-ended, plastic-bodied can (2ME*), is already the preferred package for insecticides, liquid detergents . . . many other products. Here is the lowest cost squeeze-to-use package for 6 fluid ounces or more.

BRACON containers are ideal for foods, pharmaceuticals, cosmetics, household, automotive and chemical specialties. Write for details.

*U. S. Reg. T. M.

BRADLEY CONTAINER CORPORATION

Maynard, Mass.—*New York, Chicago, Los Angeles, Toronto*

What you should know about

PIGMENTED POLYETHYLENE FACED HEAVY DUTY PAPERS

For Long Life Protection Out-of-Doors

T P&P COMPANY

A Technical Report by Thilmany Pulp & Paper Company

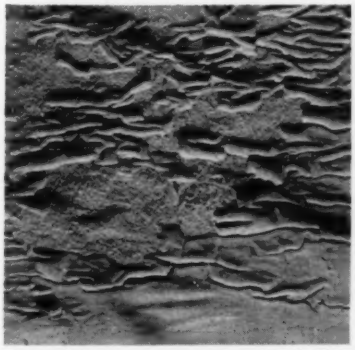
Reinforced asphalt laminated papers have been in use for many years as outdoor protection covers, shrouds and tarpaulins. They are also widely used as industrial product wraps and for constructing temporary shelters and buildings. Asphaltic grades perform well for reasonable periods but sun, water and frost gradually break down the outer layers and some of the protective value is lost. The application of polyethylene coatings on such grades is now greatly extending their useful life.

The excellent protective properties of polyethylene coatings on outdoor exposure papers were recognized as early as 1950 and Thilco clear polyethylene faced asphalted grades were developed to extend service life. However, because of the degrading effect of ultraviolet light on clear polyethylene, such grades still showed signs of surface checking after three months of summer sun.

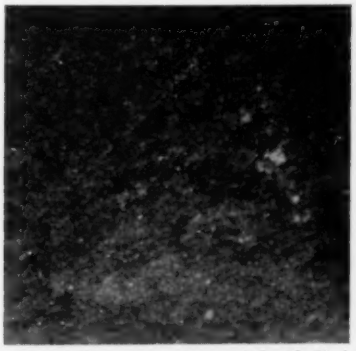
From the period of 1950 to 1954, investigation and test usage in the wire covering industry demonstrated that pigmentation of the polyethylene coatings on these grades greatly reduced the penetration and degrading effect of sunlight. In 1954, Thilmany Pulp & Paper Company began the manufacture of reinforced protective papers using Black pigmented polyethylene, as well as White pigmented. It was immediately evident that these pigmented polyethylene facings remarkably extend weathering life and tests still underway indicate that, when properly battened down, such reinforced papers may have an outdoor exposure life in excess of three years.

Black pigmentation is both highly effective and economical in the polyethylene facing on outdoor exposure papers. White pigmentation is less effective in reducing weathering resistance but it is far superior to clear poly and, in certain instances, the additional reflectivity and lower temperature created may prove to be advantageous. All users of reinforced waterproof papers for outdoor use can greatly extend the service life of these grades by purchasing Thilco polyfaced reinforced asphalted papers known as POLY-KRAFT. They are available in a wide range of grades, and also furnished without reinforcing. Samples gladly furnished on request.

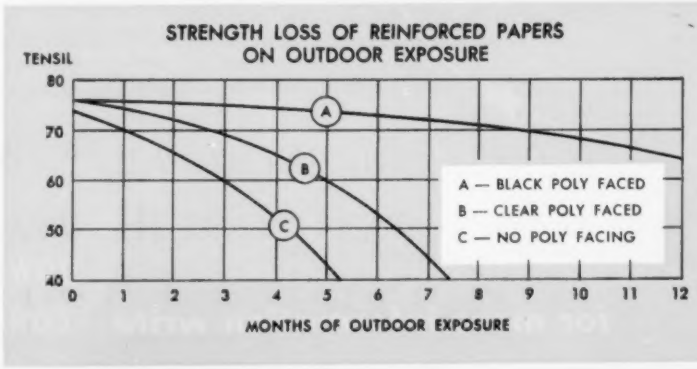
THILMANY PULP & PAPER COMPANY
KAUKAUNA, WISCONSIN
New York • Chicago • Detroit • Cincinnati



General Motors top paper coated with Clear Thilco Poly-Kraft weathered 8 months.



General Motors top paper coated with Black Thilco Poly-Kraft weathered 8 months.



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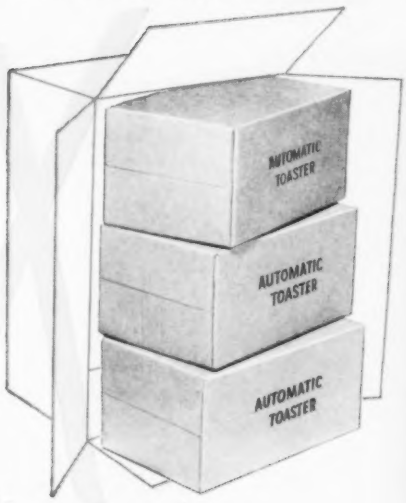

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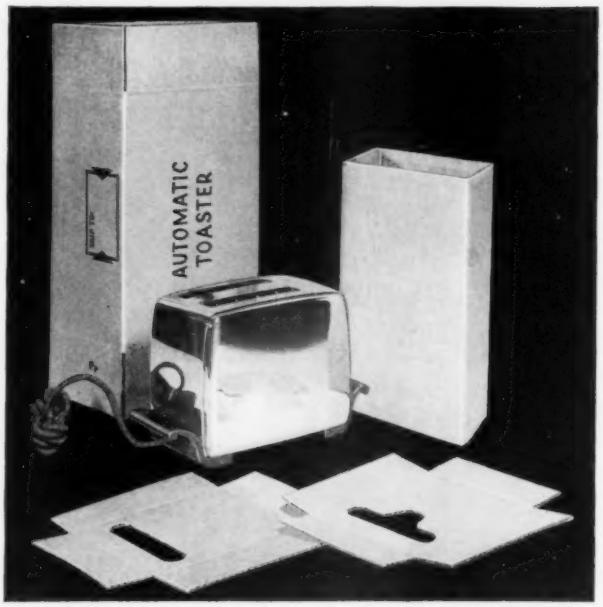
A MASTER CARTON AND AN ENTIRE PACKING OPERATION!



by *Inland* engineering and *Inland* material

● Think what it meant for this manufacturer, annually shipping more than a million leading brand-name toasters, to save the entire cost of a master shipping carton and the labor cost of packing it. Inland's engineering skill made it possible!

Now, an inner sleeve of Inland's exclusive Air-Pak material literally floats each unit inside its individual container . . . assuring safe delivery and eliminating the need for a master carton.

This single-unit packaging provides another advantage . . . distributors have greater flexibility in filling individual dealer orders.

Your Inland package engineer is a *corrugated shipping container specialist.* When your product packaging is entrusted to him, you can be sure you are getting the benefit of every possible packaging economy applicable to your product.

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Packaging Problem:

St. Louis Independent Packing Company, a division of Swift and Company, required a very special innerwrap for their new Hickory Hill brand individual pork sausage patties. This innerwrap had to provide protection against water vapor transfer; be greaseproof; withstand the stress of opening and re-closing; could not stick to the individual patties; be printed with special inks and *still* be economical.

Innerwrap by Western-Waxide—Container by Sefton Fibre Can Co.—Label by Reynolds Aluminum Co.

Solution:

Western-Waxide's package research scientists and food technologists, drawing on their previous experience in solving packaging problems, selected .00035 aluminum foil as the basic barrier material for this unique innerwrap. However, foil itself was only part of the answer. Frequent laboratory testing under refrigerated storage conditions and simulated consumer use soon showed that a lamination of bleached 21 lb. M.G. paper, special adhesive laminated to the foil, provided the required extra margin of strength, resistance to tearing during opening or closing and a superior printing surface.

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Western-Waxide package research and development turns problems *into* profits *for* you! *These services of our packaging research and development laboratories and personnel are available to solve* your *packaging problems. Write or phone your nearest Western-Waxide office today.*

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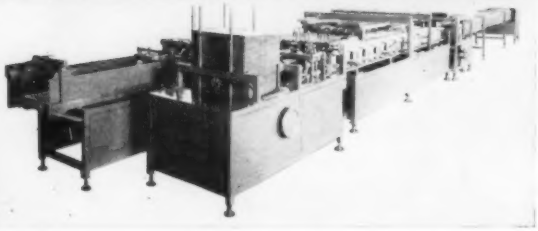
"Old Fashioned"
in handling
your corrugated
cases?



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equipment feeds, forms, positions, loads, seals, and imprints shipping containers automatically

PACKOMATIC GALLON-CAN CASE LOADER

Packomatics high-speed, continuous-motion case forming, feeding, loading and sealing machine, shown above, oiled the way at the Esso Standard Oil Company plant for faster fully-automatic casing of gallon cans. This is the only machine on the market designed for cost-reducing end-loading style corrugated shipping containers. Custom-Engineered to accomodate cans from the 12 oz. size to the 5-qt. Imperial gallon size, for an almost endless variety of products—from foods, juices and beer to paint, chemicals and cleansers.

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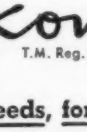
PACKOMATIC machines include the Bale Sealer — Case Sealers — Opener-Loaders — Case Imprinters — Telescoping Volumetric Filler — Packer-Gluers. Units available, semi-automatic or fully-automatic depending on your needs.

Just stack the magazines with "knocked-down" containers. The rest is automatic. With Packomatic Custom-Engineered equipment, containers are fed out, formed and positioned, end-loaded with cartons or cans, sealed and imprinted 4-sides (serial numbered, if desired) ready for shipment. Packomatics do the whole job—or any part of it. And how they pay off in any plant! End-loaded cases require up to 28% less board. Labor costs shrink dramatically and your packaging line keeps pace with your production line. Your Packomatic line can grow as you grow, too. Start now with a case opener and loader, or case sealer, or imprinter—build it unit by unit into a complete system.

Six 5-qt. cans or gallon cans in 20⅛" x 13⅝" x 9 3/16" case and 20¼" x 13¾" x 8¼" case

Twelve 46 oz. cans in 21" x 13" x 7⅛" case

Twenty-four cartons in 12½" x 10⅝" x 8½" case



Eighteen 7 & 8 oz. cartons in 20" x 14⅞" x 8⅛" case

Sixty cigarette cartons
King Size: 17⅞" x 11½" x 22"
Regular: 14 3/16" x 11½" x 22"

TYPICAL CASE LOADING PATTERNS FOR CANS AND CARTONS

Twenty-four 12 oz. cans in 16⅜" x 10 5/16" x 5 5/16" case

Six No. 10 cans in 22 1/16" x 17⅜" x 7⅛" case

Thirty 1 lb. cartons in 16⅛" x 10 5/16" x 7¼" case

Twenty-four cartons in 19½" x 10⅞" x 7" case

Forty-eight cartons in 22¾" x 23½" x 15⅞" case

With 65% of its packaging man-hours devoted to sampling programs for the medical and dental professions, A. H. Robins Company, Inc. must do all of its production packaging in the remaining 35%. Further, it must compensate for a range of product and container variations by simplifying its methods of product supply and combining production shortcuts with standard machinery. In this article, Mr. Slater tells how his plant coordinates these elements to get a packaging operation representing a balance between high speed and adequate inspection.

Packaging operations dovetail with sampling programs

By John E. Slater,
Director of Purchasing,
A. H. Robins Company, Inc.,
Richmond, Virginia

Our approach to the packaging of ethical drug products involves a number of variations: For one thing, we have about 35 different items, most of which utilize three different containers. For another, we have a large variation in run length. But perhaps the greatest problem we have is coordinating our production packaging with the packaging of samples for the medical profession.

Although ethical pharmaceutical items are sold through druggists, the manufacturer's sales effort concentrates on the medical profession. As a result, we are constantly sending samples by direct mail to physicians and dentists. In fact, 65 per cent of our packaging manhours are used on some type of sampling program. Therefore, all of our production of stock packaging utilizes the rest.

In developing a packaging operation to fit our particular requirements, we have learned a number of important lessons. A review of our experience in developing an efficient packaging operation may be of interest to others. Therefore, I shall discuss our operation in terms of (1) product variation; (2) container variation; (3) equipment and machinery; (4) packaging line personnel, and (5) the operational combination of all of these.

Products And Containers

Our products include tablets, hard-shelled capsules and liquids. Each of these items uses three different containers on the average. Some offer special packaging difficulties; for example, a soft uncoated tablet is harder to place in a container than a coated one.

On the subject of container variations, perhaps the easiest way to emphasize our problem is to enumerate the containers we use. Therefore, they are listed as follows:

Round bottles: Wide mouth: 30, 50, 60, 120, 150, 200, cc.

Boston round bottles: 1, 4, 8 ounces. 128 oz. Amber Packers.

Blake bottles: 2, 3, 5, 8, 10, 12, 16, 20, 24, 32 ounces.

Shelf-line bottles (label on end to save space): 12, 16 ounces.

Vials: Nos. 2, 3, 5, 10.

Metal caps: 20, 22, 24, 28, 30, 33, 38, 43, 45, 48 mm.

Plastic caps: 20, 24, 28, 38 mm.

Polyethylene two-part closures: Nos. 3, 5.

In addition, we use 40 different sizes of cellophane bands. Further, we use two types, opaque and clear. For example, in our packaging of narcotics, it is necessary to use a clear band in order to show the government stamp.

Machinery Standardization

One of our basic policies with regard to packaging machinery is to standardize as far as possible on the equipment of one manufacturer. A major reason for this is that it makes

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John E. Slater has been associated with packaging for 25 years. Prior to joining A. H. Robins nine years ago, he was with Virginia Carolina Service Corporation, a firm specializing in tobacco packaging, which he joined following his graduation from high school. He has also had an extensive amount of sales experience. He is a member of Packaging Institute; Drug, Chemical and Allied Trades; the chemical branch of the New York Board of Trade, and is a member of various committees of American Pharmaceutical Manufacturers Association.

these units as interchangeable as possible. Further, our doing so simplifies the job of a packaging line mechanic.

Another basic policy is that we leave the machine building job to the machinery manufacturers. We develop our specifications in terms of performance desired. We do not try to dictate to machinery manufacturers concerning just how they should build a machine to give us what we want. In this connection, we do none of our own machine building and do just as little machine work and gadgeteering as possible.

Another requirement we adhere to is that of making each machine serve as many different items as possible. Although we do little engineering, we do develop our own plans and layouts for packaging lines and packaging operations.

Still another idea we carry out is that of having our machines in fixed locations, and having *portable* supplies of product. This is in contrast to the practice of many companies of having a fixed product supply system and movable items of packaging machinery.

For our fluid products we use 500-gallon stainless steel tanks mounted on wheels. We have enough of these tanks to compensate for any shifts of production and allow reasonable reserves. Also, the use of such tanks allows our mixing department more flexibility than it would otherwise have, and eliminates the need for an elaborate system of overhead piping.

Our personnel policy is to have high caliber workers, adequately trained so that they can handle any job in the packaging room. We think we have made our jobs among the most desirable in Richmond. We are convinced it pays dividends to have the best possible people on our packaging lines.

As a result, our girls can go from one job to another on a moment's notice. Not only do they rotate from one job to another on their regularly assigned packaging lines, but they can work any other position — either on production packaging or on our sampling lines.

In short, we insist on plant-wide flexibility rather than merely packaging line flexibility. Underlying our need for all this flexibility is the unpredictable variation in our sampling program. At any moment our company may find it expedient to send out another national mailing to physicians, involving 125,000 - 150,000 packages. Further, some of these samples may contain not one but two vials.

Our emphasis on sampling by mail is a reflection of one of our basic sales policies. We insist that our representatives make their visits with physicians very brief. As a result, their individual conversation concentrates on only one or two items. Therefore, we depend heavily on sampling by mail to keep the medical profession more fully informed about our products.

Making It All Work

Combining all of the foregoing factors into an efficient packaging line operation demands much imagination and resourcefulness of those managing our plant operations. For one thing our scheduling must be worked out to have as long runs as possible. However, if we have a run that lasts between seven and ten days, it is quite a long one. Even a run of three days may be considered long.

Therefore, we try to plan our schedule so that similar items go together. Our object is to cut down machine change-over time. For example, several runs of different products may take on the character of a single run — as the only difference entails a change of product and label.

Inspection is an important phase of our packaging operation. We make inspections up and down our lines as well as a final inspection on each line. Our girls check every bottle or vial for proper labeling, defective tablets, and other apparent variations.

For example, a typical line operation utilizes five girls; these may include one for watching equipment, two for sealing, and two for checking and inspecting. Actually, one girl could do the checking but the second girl is important to the doing of an adequate inspection job.

Ordinarily, all girls on one packaging line change jobs every two hours. Although every line has a supervisor, the girls usually change from place to place on their own initiative. Further, they do this at their break or lunch hour so that there is no disruption of production for the purpose of job rotation.

Our principal packaging lines for stock production are mechanized as far as we think possible. Even so, these lines do not use automatic case sealers. We have so many variations in box sizes that the benefits of mechanizing the case sealing operation would be lost due to the time taken out for change.

Production Shortcuts

We are now using box labels printed on tape of kraft stock. This permits us to use one printed box for a number of different items simply by changing labels. Further, the use of different colors on our labels gives us a color code system. We use these labels in roll form and

Packaging of samples for mailing to physicians and dentists involves assembling 125,000 to 150,000 packages along such a line as this. Sample mailings occupy 65% of the packaging man-hours at this plant.

Robins does practically no machinery development work of its own and concentrates its machinery on the units of a few machinery suppliers. For example, it standardizes on Lakso and Dismat tablet counters.

have dispensers for cutting them to pre-determined lengths.

Another production shortcut involves the synchronizing of a cottoner and a capper. We run both of these units as a single machine. Although we shall always have some hand cottoning, we expect to make increased use of machine cottoning. However, some of our runs are so short that they do not justify the use of a cottoning machine. When manual cottoning is necessary, the filling speed and the product involved will determine how many girls to use for cottoning. These may range from one to as many as four or five. What we try to do is keep up with the machine speed of the line.

Rates Of Production

A few figures selected at random will illustrate the general tenor of our production line operation. One of our lines will handle one million coated tablets in bottles of 100 each during a four-hour period. The same line will handle a million uncoated tablets in five and one-half hours.

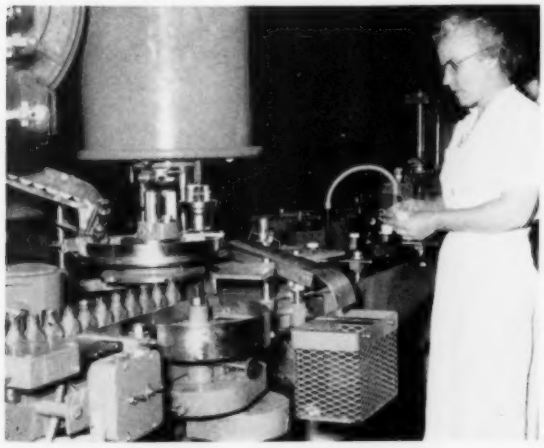
A line operating a synchronized cottoner and capper will handle between 250 and 300 gross No. 2 "Opticlear" vials in seven and one-half hours. During the same time interval, this line will handle 300 to 350 gross No. 5 vials. A special problem of a small vial is that it is extremely light in weight, and tends to tip over easily on a packaging line.

Normally, the speed of each line is governed by the speed of its filler. This is particularly true of tableting operations. As a result, we built each line around its filler. We see no point in having faster equipment than a given filler, because it would be idle at times while waiting for the filler to catch up.

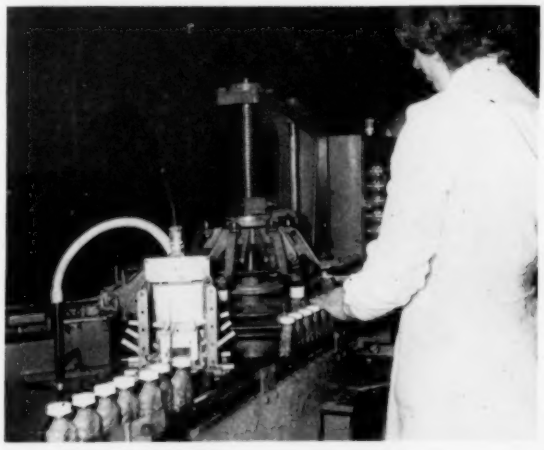
Purposes Of Machinery

One of our big problems is getting

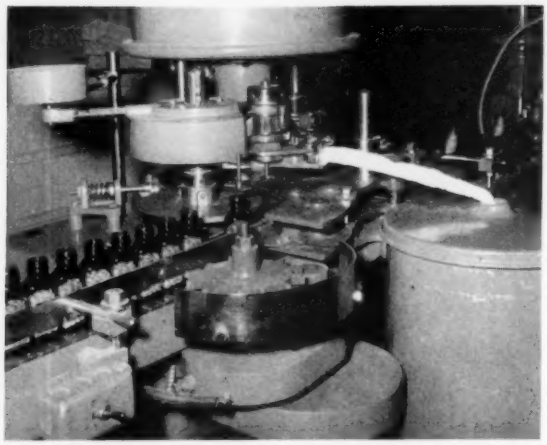
Some packaging tasks combine manual operations with inspections. The plant uses 40 different sizes of cellophane bands and two types, opaque and clear. It uses New Jersey labeling equipment and has standardized on these units.



Bottles going through this labeler receive coded labels prepared in the plant's own label department. Such coding operations permit the use of a single printed label for a number of different items, and cuts label supplies.



Girls on the packaging line change from job to job and from line to line as needed, with job rotation on each line taking place every two hours. Inspection of packaging and product is important phase of job.



On a typical line, filled bottles of tablets go through a Consolidated cottoning unit before moving into the Consolidated capper, seen at far right. Similar equipment is used on different lines wherever possible.

equipment that serves not only stock production but also our sampling operation. One of our Consolidated cappers illustrates our use of such multi-purpose equipment: It is a combination capper and plug machine. It handles metal and screw caps as well as polyethylene plugs.

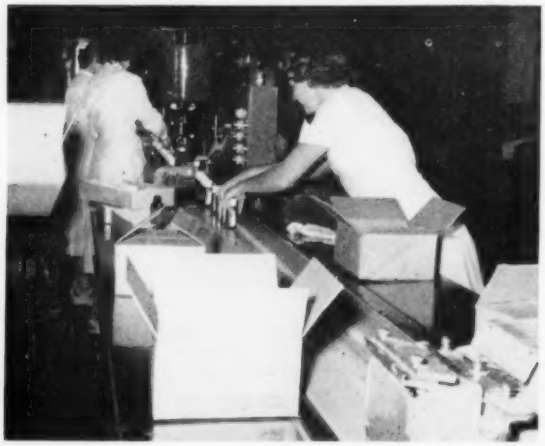
An ingenious example of a multi-purpose application is our use of a New Jersey labeler to label fibre cans with metal ends. Ordinarily this labeler handles vials and bottles. However, we are using a pre-addressed label to serve both as a closure and a mailing label for such cans containing physicians samples. The cans go through in exactly the same way as the glass containers.

To help minimize our label supply usage, we have a coding operation. We use New Jersey coding equipment to mark our labels in advance of use. One department, specializing in this work handles this operation in the plant.

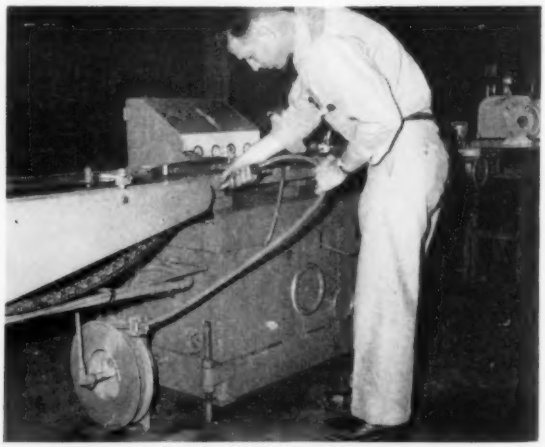
As suggested above, our standardization on a small number of machinery suppliers contributes to our operating efficiency. For example, we standardize on New Jersey labelers; International liquid fillers; Lakso and Dismat tablet counters, and Island Equipment conveyors. As a result, our mechanics need be familiar with the equipment of just one manufacturer as a general rule. This provides a certain interchangeability of change parts, and helps reduce our downtime, since our lines can be changed completely in one half hour or less.

Lest this suggest that we concentrate on high speed, I wish to emphasize that this is not paramount. We do not run our lines at the highest possible speeds because doing so would interfere with proper inspection. We think adequate control of our finished product is more important than top speed.

At the end of a line bottles go into corrugated boxes preparatory to shipment from the plant. There is a final inspection of each bottle, as well as inspection up and down the line during the packaging operation.



Although the plant does little gadgeteering, it has worked out a number of production shortcuts, such as this floor-mounted Reel equipped air hose cleaner. When not in use, as seen here, the hose retracts.



Walter A. Pisarski has been with Stewart-Warner Corporation 14 years. Before becoming head of the packaging department in 1952, he was engaged in production control and expediting work. He is a professional member of the Society of Industrial Packaging and Materials Handling Engineers, and participates in the activities of American Management Association. His packaging education includes work at Illinois Institute of Technology, and the Rossford Ordnance School for packaging engineers.

Here is a helpful approach to the problem of step-by-step package development: Divide the project into its logical parts and take them in sequence. This article reviews a general formula that Stewart-Warner's packaging specialists find helpful. It also shows how the formula worked—in the development of a new package for lubrication fittings.

Seven steps to a new package

By Walter A. Pisarski,
Packaging Engineer,
Alemite and Stewart-Warner Instrument Division,
Stewart-Warner Corporation,
Chicago

New package development—a short name for an involved process — takes place in as many ways as there are packaging specialists. But we at Stewart-Warner have found, through experience, that seven broad points have helped us in our efficient development of a new package or modification of an existing one. We think of it as our seven-step method and, although it does not always apply in full to each project (and we find exceptions to its general rules), we have found it effective as a pattern-to-production tool.

Before presenting an analysis of our approach in detail, here is a brief summary of our seven major points.

1. *Study all details of the product to be packaged.* This is our starting point and takes into consideration product construction, handling, shipment, customer acceptance, hazards, storage and duration. By duration, we mean the time factor involved in storage of the item (e.g. 90-day storage).

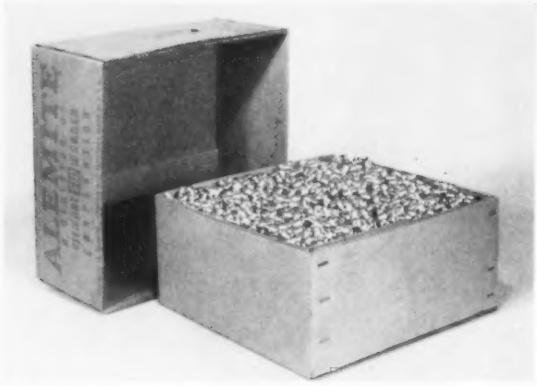
2. *Check the pertinent carrier classifications.* To be sure that a package can be shipped as we have planned it, we check such items as the Consolidated Freight Classification. We want to be sure that our proposed package is acceptable within the framework of the classification and that it can travel under the lowest possible tariff.

3. *Compare the construction of the proposed package to packages now in use.* As soon as we have settled upon a tentative package we carefully check our files to see if we already have a package that can be used or adapted to the particular product. Naturally we always try to avoid introducing a new box or other package. Sometimes we are able to consolidate several packages for our new purpose.

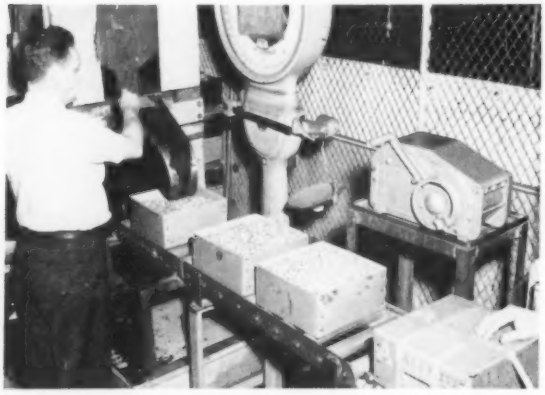
4. *Choose the packaging materials.* Once we have decided upon the package we consider such materials as tape, strapping, protective pads, and other similar items, all exclusive of the basic box or package.

5. *Develop the inner packing.* In accord with product design, inner packing is designed to protect the product, and to provide peak efficiency and economy.

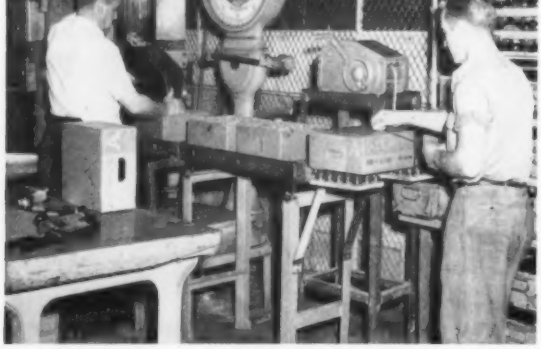
6. *Strive for simplicity of design.* While working our way through the preceding five steps, we always try to keep our structural and functional designs simple, so that there is a



Worked out in accord with Stewart-Warner's seven-step method, the final package became this special two-piece telescope box, 11" by 11" by 5", made of 275 lb. test board B-flute. Average weight per box varies between 57 and 78 lbs. loaded, depending on its particular contents.



To accommodate its new package, Stewart-Warner had to change its loading method. Plant technicians installed a revised chute on the box of its filling unit, as seen here. Also, it was necessary to change the conveyor in order to handle the tape operation — as seen at lower right.



Installation of a ball-type conveyor at the end of the packaging line was a feature of the revision program. Use of this conveyor facilitates turning the box in order to apply the tape more easily than otherwise would be possible. Finding no specialized equipment available to meet its needs, Stewart-Warner installed a hand application procedure using standard tape dispensers to apply these pressure sensitive filament tapes to the boxes in strips.

minimum of labor, equipment, and effort involved in handling, filling, completing, and preparing the package for shipment and storage.

7. *Prepare the package specification.* The final step, upon completion of the new package, is to develop reference records for easy use. This contributes to effective service throughout our organization and also works for the benefit of our suppliers. One application of this seven-step method is illustrated quite clearly by a recent project we handled and which involved changing the package of the Alemite lubrication fittings.

These fittings were sent by bulk shipment to our distributors, as well as to automotive and implement manufacturers. For some time we had been making these shipments in wirebound boxes, 15¼" by 7¾" by 7¾". The boxes used ¼ veneer and 13 gauge rock fasteners and averaged 105 pounds in gross packed weight.

A Corrugated Box?

After some time it struck us that a corrugated box might serve our purpose better, so we started a revision study. Meanwhile, before it had gone beyond the initial stages, some of our customers urged us to use a corrugated box. Independently, each customer, for a different reason, had reached the same conclusion.

One manufacturer wanted a box which would not exceed 65 pounds in weight. Another wanted a type of corrugated box which would contribute to effective palletizing within his plants. Our own consideration of the change focused on three points: Reduced cost of packing, reduced waste of space because of tonnage, and palletizing made possible through the use of corrugated boxes.

Before long we found we were considering different corrugated boxes to meet the varying requirements that had been suggested. For example, the first manufacturer suggested a box 9" by 9" by 6½", since his idea was to have the package not over 65 pounds. We, in turn, were weighing the advantages of a two-piece corrugated carton, 11" by 11" by 8½",

nine to a pallet 36″ by 36″, with a typical weight of 125 pounds per box.

Obviously, a compromise solution was indicated. Our final result was a special two-piece telescope box, 11″ by 11″ by 5″, made of 275-pound test board, B-flute. The average weight per box varied between 57 and 78 pounds loaded, depending on the parts or fittings it contained.

Study Product Itself

In working out the solution to this problem, we followed the general seven-step outline. Our first step, careful study of the product itself, brought out a number of packaging problems. Most of our lubrication fittings have smooth-flowing lines and flow easily within a container. As a result they tend to rupture a corrugated container easily — even on the slightest shock.

This meant that a primary consideration to cut hazards was board thickness, the nature of the plies, and the corrugations. We also had to consider the best possible structural and functional design, to prevent box sides from collapsing due to the shift of these free-flowing items within the box.

One of our primary problems with our original box was the breaking or splitting of corners. It was obvious that our new box would have to be reinforced in some manner. On this phase of the development, our tests disclosed a combination wall thickness of three and four plies of "B" flute 275# test, provided sufficient strength and dampening of shock when subjected to a 36″ cycle drop test.

Wall Construction Details

Another primary problem was a wall construction to provide a minimum of outward bowing and capability of a static load of 820 pounds per container. We started out with a three-piece container, length 8″ width 8″ with a 9″ wall. The vertical walls consisted of two plies of "B" flute 275# test and four plies on the top and bottom.

A series of compression tests resulted in utilizing a two-piece container, length 11″ width 11″ with a 5″ wall, with a vertical wall makeup of four plies "B" flute and three plies on the top and bottom.

As a point of interest, when emphasis on vertical wall durability is desired, attention should be directed in obtaining a vertical wall as short as may be feasible. This elaboration is for primary consideration when developing a container for items of high density and free flowing lines.

Another condition was the oil on the surface of certain fittings. Although on most of our fittings there is not enough oil to damage the box (even though there is some oil penetration), we found enough oil penetration on one item to have a material effect on the box liners and corrugations. As a result of this study, we are using a wet waxed kraft sheet to hold the oil within. In this way the oil cannot reach the corrugated board.

Other early considerations involved the application of the change to our packaging production lines, the storing of the packages, the type of handling involved, and the question of pallets, as well as the handling of containers singly. We now ship these individually or palletized.

Storage Requirements

Going into further considerations involved in our first step, we made a study of storage requirements. This study illustrates our approach to package engineering and shows how we solved our particular problem. A typical storage period is 90 days for fittings in active supply. The fittings are palletized four pallets high, with three tiers on each pallet. This arrangement made it imperative that we learn what load the first, or bottom-most, container would carry. Our initial estimate was 820 pounds.

In the course of development we had a testing laboratory go into this problem for us. Its test results proved a safe load of 800 pounds on the bottom container — thus closely confirming our initial judgment.

Test results with our package disclosed a loaded compression of 750 pounds for ¼″, 2,140 for ½″, 3,460 pounds for ¾″, and 5,500 pounds for 1″. These are with boxes conditioned at 50 to 70 per cent relative humidity. Where storage is unconditioned, these figures may be somewhat less satisfactory due to the effect of moisture, warehouse fatigue, and similar factors.

Carrier Considerations

Turning to our second major point, that of carrier and classification problems, we verified that the particular proposed container came within established regulations. It was originally listed as Package 996 under a special rule. It is now included in a general part of Rule 41.

Incidentally, our experience shows that it is very important for the packaging engineer to keep abreast of Rule 41 and other details of the Consolidated Freight Classification, as well as any other similar rules that may be applicable. Even where an engineer is reasonably sure that his proposed package falls within one of the established rules, we have found that it is a good idea for him to check the classification. In addition, the traffic department or similar agency of his company may have the latest information and technical details concerning classifications, rates, and similar matters.

Package Standardization

Next we approached our third point, that pertaining to standardization. We compared our proposed package to all of the existing Stewart-Warner standard bulk-type containers to see if any of the existing designs could be modified for use with lubrication fittings. However, we found nothing along this line, so plans for the new package went ahead.

Undoubtedly we shall find additional applications for this new package at some future time. Perhaps modifications will permit it to fit a number of items and save us the expense of developing another new package. It is our practice to standardize and simplify our container usage as far as possible.

Choosing Package Material

Our fourth major step, selecting the box material, came next. We chose a 275-pound test corrugated board, B-flute.

After selecting the material, we turned to the question of methods of securing the package. We experimented with various kinds of hand and automatic strapping equipment, with various filament tapes, and steel strapping.

In a project of this kind we find it helpful to consider the specific advantages and disadvantages of each given material. For example, from our standpoint steel strapping was desirable since it could seal the package faster and cheaper than any other way. But it posed definite problems for our customers. These included disposing of the strapping and the waste, etc.

Eventually we looked into pressure-sensitive filament tapes and decided to use them. Since we could find no automatic application equipment or method to fit our needs, we installed a hand application using standard tape dispensers to apply the tapes in strips, using the requirements stipulated in the consolidated freight classification. The tape is procured in a 1½" width and slit to ¾" by an attachment in the dispenser. This is considerably cheaper than buying the tape in ¾" width.

Our new package also made necessary a change in our loading method. We had to install a different chute on the box of our filling unit. In addition, we had to change our conveyor in order to handle the tape operation. We installed a ball type conveyor at the end of our line which permits turning the box in order to apply the tape more easily.

We have found that a packaging engineer should try the different methods personally. In this way he can be sure that a given manual or semi-automatic method is feasible operationally. For example, in developing a table with fixtures to handle our new corrugated box, it was helpful to try these out in various ways to see if the boxes set up as planned on paper.

Interior Packaging

Considering our fifth major heading, the analysis and determination of interior packaging materials, we only had one type to evaluate. This was the grease-proof sheet used with the fittings of the particular type that caused oil seepage into the packaging material.

Generally, however, where an interior packaging material is involved, our practice is to consider the type which will give the best kind of protection, of application, and of minimum cube of storage of the material itself. The latter is important because certain interior packaging materials may take up more space in storage prior to use than others. These may prove disadvantageous on that score alone. Further, we take into consideration the availability of the different materials.

When developing a particular kind of interior packaging, we consider the physical structure involved as well as the configuration of the item we are seeking to package. Obviously, for example, it is necessary to apply the bracing to the strong points and cushioning to the weak points. In any case, it is always helpful to work this out very closely with actual models of the particular products.

Simplicity Of Design

We had no problems with our sixth general heading, simplicity of design, in this particular instance. We disposed of that in connection with the particular material. In other words, at the time we selected the filament tapes we developed the most suitable methods we could for handling and applying them.

After we completed our entire project, we crystallized it into a final specification, step number 7. The major feature of this, in every case of a new package, is the procurement drawing. This includes all pertinent details. These drawings are recorded with part numbers and are indexed to the part for which the package is developed.

After our packaging specifications are determined, and the time comes to place orders, these specifications appear in the form of requisitions to our purchasing department. The purchasing department in turn gets a print of the procurement drawing from our packaging department. These drawings go to the vendors and also are used for our own inspection of incoming packaging material. This is possible since the drawings are complete with all necessary dimensions and similar information.

The final arbiter of any new package, of course, is the cost savings or other advantages that accrue through its use. The virtues of our change to corrugated boxes for our Alemite lubrication fittings is shown by the following advantages by comparison.

These figures are based on an equal amount of parts packed in corrugated versus wirebound.

Space gained	28%
Tare weight reduced	42%
Packing material and labor savings	14%

Methods have their advantages

Mr. Pisarski's emphasis on a seven-step procedure illustrates the convenience of routinizing methods as far as possible consistent with the needs of flexibility for a particular project. A careful review of his seven steps discloses that the enumerated procedures apply with equal facility to a wide range of packaging projects. Those seeking to simplify their package problem-solving should consider the advantages of step-by-step procedures.

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V. C. Bremer is a graduate of Columbia University with A.B. and M.S. degrees. Following this, he joined Sheffield Farms Company and engaged in quality control and research work. In 1947 he joined the C. F. Mueller Company. He is a member of American Chemical Society, American Association of Cereal Chemists, and American Society for Quality Control.

In spite of the statistical and mathematical complications of quality control, its underlying importance to a particular operation frequently rests on (1)how it works on the line, and (2), how it contributes to the control of net weights of finished packages. The author of this article has carried quality control directly to the girls on the packaging lines. In this article he emphasizes the practical production realities of its application in his plant.

Maintaining net weights through quality control

By V. C. Bremer,
Quality Control Manager,
C. F. Mueller Company,
Jersey City

In its broad aspects, the quality control program of 20 years ago is similar to the program of today. However, one great difference is the present application of statistical methods and techniques to all phases of product components, processing, packaging, sales and consumption.

In the following description of one type of control program as applied to packaging, emphasis will be placed upon practical aspects rather than upon technical mathematical explanations or upon organizational methodology and setup. Dr. Leatherman's article in the October, 1956, Package Engineering covers this latter phase very well.

However, brief reference must be made at some points. Doubtless, many points are "old hat" but repetition does not detract from their importance. We must have quality control at the beginning and all the way through in materials, processing, personnel and personal relations if we are to maintain quality control of net weights at the packaging line. For those in the food and allied industries where the finished product is sold by weight or volume, this control is critical.

In addition to legal requirements and moral obligations to the consumer, the economic factor is vitally important. The perils of underfills and costly, uncontrolled overfills can wreck the ship of good management. Only by minimizing these twin perils can we fulfill our obligations to the consumer and the company. Obviously, this calls for dynamic measures, not merely a static review.

Use A Control Chart

A control chart of a type suited to the particular need is most helpful in this respect. Through its use, we can readily distinguish between normal variations which are present in all operations and those which have a definite outside (assignable) cause. This latter type of variation calls for immediate corrective action based on mathematical fact rather than personal judgment. Limits, when computed, should not be so loose that no measurement ever falls outside of them, or so tight that conformance is impossible.

For some operations, control limits based on two standard deviations (approximately 95% of material in control) rather than the conventional three standard deviations (99.7% of material in control) may be beneficial. This may apply where one machine is used for two different products having different characteristics and where the output of one item is small compared to the other. The saving in floor space, in capital investment for a separate machine, partial production use, more than compensate for the five percent of packages out of control and presumably overweight.

In our company, simplicity has

been our aim in setting up and applying a system for weight control. Two types of reports are used for this purpose. These are somewhat different from those generally used in industrial applications. The control limits for each product are calculated for individual packages rather than for averages of these individuals. These limits were computed after study of the capability of each operation.

While control becomes a little more difficult, the results more nearly approximate field practices of regulatory agencies other than those on a federal level. Not all political subdivisions follow the practices set forth in the Federal Security Agency standards of 1949. Their practices vary from allowing a certain percentage of underfill packages to allowing no underweight packages. While much work has been done, no uniform practice has yet been adopted.

In plotting averages, individual weights such as +3 or —3, neither of which we consider acceptable, would cancel each other. True, a range chart would show this, but then, two charts are necessary. Also, the range chart could be in control but the average go out of control. It is felt that the method of reporting to be described gives sufficient information for action without these computations. However, there is a relatively recent development by Datamatic wherein individual data is recorded on a strip chart, averages computed electronically and also plotted.

Applying The Charts

In the macaroni industry, products are generally classified as long and short goods. One of our two charts is applied to both of them in a slightly different manner. The long goods operation necessarily is a manual operation wherein approximately 9" lengths of spaghetti and macaroni are taken from a moving belt conveyor by a group of six or seven female packers. The material is weighed on Exact Weight balances of the under-over type, wherein the weighing range is marked by two lines, one on either side of a central point. Weighing inside these lines will result in packages within control limits.

Originally, there were two more lines located at a point twice the distance from the center as the first two. Any weighing within these lines was accepted but none was to be outside. In practice, such was not the case. The weigher's bias was to stay within the first and second line on the high side rather than between

WEEKLY PACKAGE WEIGHT AND MOISTURE ANALYSIS

Inspector | Product | Code No. | Date

WEIGHT RANGE	Day Unit 1	Day 3	Long Goods	Night 1	Night 3	WEIGHT RANGE	Day Unit 1	Day 2	Short Goods 3	Short Goods 4	Short Goods 5	Night 2	Night 3
	16 oz. Prod.E	8 oz. Prod.F		16 oz. Prod. E	8 oz. Prod.F		16 oz. Prod.A	16 oz. Prod. A	8 oz. Prod.A	16 oz. Prod.G	8 oz. Prod.G	16 oz. Prod.A	8 oz. Prod.A
—8						—8							
—7						—7							
—6						—6							
—5						—5							
—4						—4							
—3						—3							
—2		1				—2	1	1		2			
—1	4	4		4	5	—1	1	3		2	3	2	
0	8	13		9	12	0	6	10	13	2	5	5	13
+1	4	3		4	3	+1	6	6	11	1	8	8	9
+2	2	3		2	3	+2	5			3	6	4	2
+3	2			1	1	+3				2	2	1	
+4						+4	1						
+5						+5							
+6						+6							
+7						+7							
+8						+8							
AVG. ±	+.062oz.	+.016oz.		+.040oz.	+.036oz.		+.106oz.	+.006oz.	+.057oz.	+.073oz.	+.109oz.	+.105oz.	+.068oz.
RANGE	4 (-1to+3)	4 (-2to+2)		4 (-1to+3)	4 (-1to+3)		6 (-2to+4)	3 (-2to+1)	1 (0to+1)	5 (-2to+3)	4 (-1to+3)	4 (-1to+3)	2 (0to+2)
OUT OF LIMIT	2-10%	0		1-5%	1-4.2%		1-5%	0	0	2-16.7%	2-8.3%	1-5%	0
Moisture	12.1%	11.5%		11.8%	12.0%		12.5%	12.7%	12.7%	11.6%	11.6%	12.4%	12.2%

Remarks

Form #44-8/51-2000

Fig. 1. A weekly package report selected at random shows the typical distribution of packages above and below the zero mark, as well as those on the zero mark, that is indicating exact weight. This simple form serves as a control tool, giving a quick summary of the general quality condition of out-going packages, thus indicating their condition as to net weights.

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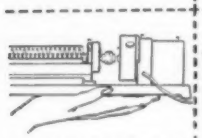
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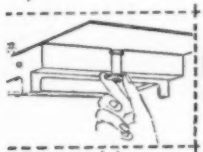
portability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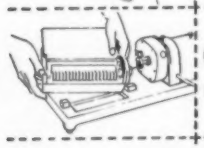
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center and first lines. Consequently, many packages fell outside the limits. With the introduction of the two-line scale, protests arose that the new limits were too strict. However, daily records showed the contrary. In fact, there were less defects from the whole group than from one individual prior to the change.

Study of this system showed little variation in the weigher's capability within a given hour, although hour to hour variations can be expected. Accordingly, each packing line is sampled every hour by the supervisor or someone under her jurisdiction who removes a full case of 20/16-oz. packages or 24/8-oz. packages. Individual weights are determined on a check scale and recorded as illustrated.

Whole numbers are used for ease

SAMPLING SHEET – QUALITY CONTROL

PRODUCT A — DATE 1/15/57
SIZE 16 oz.
TAKEN BY

	Unit #2																Unit #1					
	7-8 a.m.						9-10 a.m.						10-11 a.m.				7-8 a.m.					
Pocket 1	0	1	2	1									0	1	0		1	4	1	2	1	0
	0	-1	1	0									2	0	0		1	4	0	0	0	0
	0	0	0	0			Shut down to						1	1	0		2	4	0	2	0	1
	1	2	1	2			relieve						1	-1	0		2	4	0	0	-1	0
	-1	0	1	2									0	0	2		2	4	0	1	1	2
Pocket 2	0	0	3	0	0	0	other units						2	0	2		0	0	0	4	0	
	0	3	3	1	2	1							2	0	0		-1	-1	0	3	0	
	1	1	0	0	0	0							3	0	0		-1	0	1	0	0	
	2	2	2	1	2	3							2	1	0		0	-1	0	0	0	
	2	0	2	1	2	0							1	3	0		2	-1	0	0	0	

Fig. 2. Actual data taken from daily reports illustrating some of the points mentioned by Mr. Bremer. Note how an out-of-control situation arose in pocket 2 of unit 2, approximately 7:45 a.m.

Old Unit #3					New Unit #3				
2	-4	6	0	0	0	0	0	0	0
1	1	4	2	5	0	0	1	0	1
0	0	1	1	3	1	0	0	0	1
2	0	3	0	1	0	-1	0	0	0
1	2	0	2	1	0	0	-1	0	0

FREQUENCY DISTRIBUTION

	Old	New
+6	1	
+5	1	
+4	1	
+3	11	
+2	𝍸	
+1	𝍸 11	𝍸
0	𝍸 11	𝍸 𝍸 𝍸 𝍸
−1		11
−2		
−3		
−4	1	
−5		
−6		

FORM NO 49—11-56—3M

Fig. 3. This shows a pocket representative of each unit. It shows how conditions under the old unit revealed a need for replacing it. The results obtained with the new unit shows the difference.

SAMPLING SHEET – QUALITY CONTROL

PRODUCT E — DATE 1/25/57
SIZE 8 oz. — I 0473
TAKEN BY

	DAY SHIFT																							
8a.m.	0	-1	-1	1	0	1	1	0	-1	0	0	-2	0	0	2	0	-1	0	0	1	0	-1	0	1
9a.m.	0	0	0	-1	0	2	0	0	-1	0	0	1	0	0	1	-2	-1	0	0	0	0	1	0	0
2p.m.	0	1	1	0	0	0	1	1	-1	0	1	0	-1	0	0	0	-1	0	-1	-1	0	0	(4	0
	NIGHT SHIFT																							
4p.m.	1	0	0	1	0	0	-1	-1	0	-1	1	2	0	(3)	0	1	1	0	0	1	2	-2	0	1
8p.m.	-1	1	0	0	0	-1	1	2	1	0	2	0	0	2	-1	1	0	-1	0	-1	1	1	1	-2
11p.m.	0	0	-1	1	-1	0	1	0	0	0	0	1	1	0	0	2	1	2	2	0	0	1	2	-2

Fig. 4. This sheet is used for the recording of individual weights, as determined on a check scale. Whole numbers are used for ease of reporting and computation. The sheet is the same on both sides so that both shifts may use it. Unusual variations may thus be dealt with promptly as discovered.

of reporting and computation. This sheet is printed the same on the reverse side so that it can be used by both shifts. This takes less file space and handling of papers by the quality control staff to whom these reports are submitted daily. In addition to the hourly check, the supervisor is free to check her packing lines at any time.

Supervisor Traces Causes

A summary of the daily outages is made and reported monthly to the production manager. In the above table, the circled weight is "out" on the heavy side; the overall average for the case is good. No action would be taken by the supervisor because of the one package. A minus weight of this magnitude would be removed from the case.

However, let us assume all the —1 figures were —3 or all the plus figures a plus 3 instead of as reported. Something is definitely wrong; either the girls are careless, material is wedged under a scale pan, the transfer mechanism to the package may be faulty, or an individual scale became defective while being used. The chart tells *that* an out-of-control condition exists but not *why*.

Here the supervisor must take over and find the cause. First recourse is to inform the girls, who, if they are merely careless, can get back to normal or who can check the condition of their scales. Should numerous minus weights still persist, mechanical defects are suspected. The mechanic assigned to this department is contacted by the supervisor. On one occasion, a piece of the transferram from the conveyor to the carton was broken off so that some material was not transferred to the package. Another time, a slight curvature in the material increased the volume of the mass so that all would not fit into the carton.

While it may seem unorthodox to have each supervisor report her own weights or to have the report made by a production worker on another worker, there are certain benefits to be derived. Each shift supervisor is responsible for the girls working under her and for their weights. In

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☐ NEW CAN VALVE

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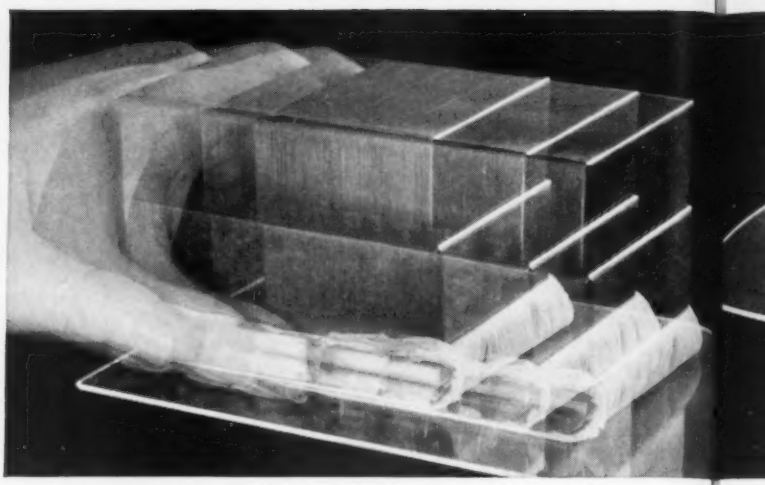
MATERIAL "X"

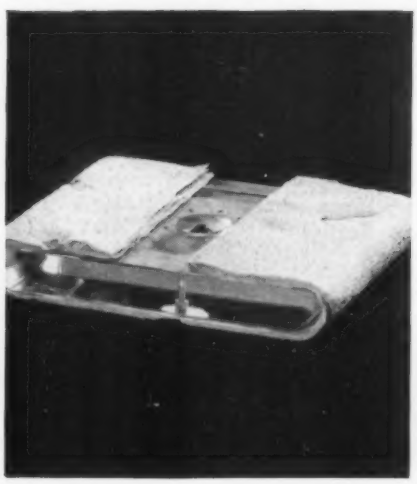
A 3" by 8" sample of cushioning material "X" is wrapped around the scratch block. Note the dial reading of the micro-threaded needle.



The test block has been placed on a sheet of clear plexiglass. Metal weights have been applied to the top of the test block to simulate load. The test block is now gently pushed across the plexiglass sheet.

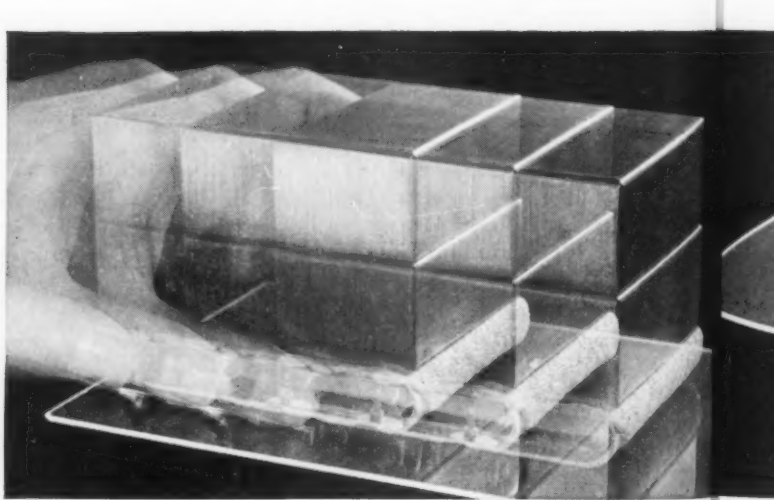
"SCRATCH TEST" SHOWS W

GIVES YOUR PRODUCT B

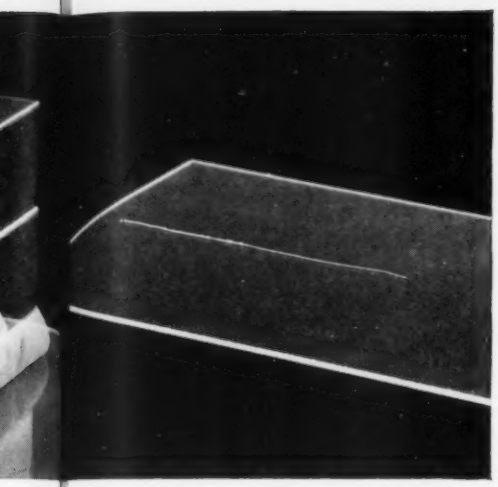


KIMPAK

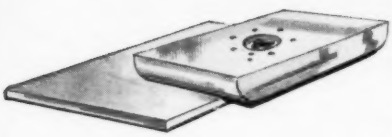
A 3" by 8" sample of Kimpak of equal thickness to Material "X" is wrapped around the scratch test block. The needle setting remains as above.



The same weights are applied to the top of the test block as in the above test and forward motion is applied. Note in either test there is no downward pressure other than the given weights.



The weights and test block are removed. The plexiglass sheet clearly shows damage to the surface. The scratch needle has broken through the surface-protecting material.



The "scratch test" shows the effect of a protruding point breaking through cushioning material. An adjustable needle protrudes from the underside of a plexiglass test block. The block is wrapped in cushioning material and weights are applied to simulate load. When moved across the surface of a plexiglass sheet, a scratch appears on the sheet if the cushioning material does not provide sufficient protection.

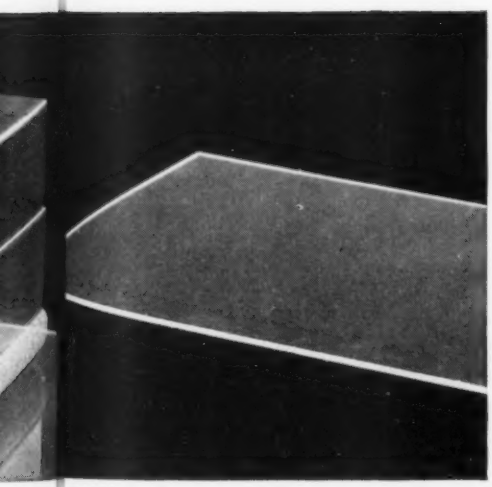
NAILS, rough spots in wood, corrugated fiberboard or other coarse packaging materials can break through inadequate surface protecting material and result in concentration of load on a small point or area with damaging results.

The surface-protecting cushion you select must have the necessary thickness under load to distribute the load evenly over the entire surface area and prevent such a break-through.

Call Kimberly-Clark today for a Kimpak packaging engineer to see you. He'll help you with your packaging problems and demonstrate the "scratch test" with Kimpak and any other cushioning material *you* select.

WHY KIMPAK* INTERIOR PACKAGING

BETTER SURFACE PROTECTION



After weights and test block are removed, the plexiglass sheet is shown to be undamaged. Lack of scratch marks reveal superior surface protection with Kimpak.

FREE—Check the effective thickness of your cushioning material

The *effective thickness* of a cushioning material is its thickness under a standard load. Here's how you can check the effective thickness of the cushioning material you are now using. It's easy with this precision-made, aluminum standard weight which applies the 3½ pound per square foot load required by Federal Specification. This weight is *free* to all packaging engineers and cushioning buyers. Just ask the Kimberly-Clark representative who calls on you or write Kimberly-Clark, Dept. E-57, Neenah, Wisconsin.

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KIMPAK

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obtaining quantity production, quality cannot be overlooked. The quality control staff has no jurisdiction over the production personnel.

The idea of a "police or punitive" function of quality control is played down. Its function is one of service—to provide aid to the supervisor in meeting weight standards by providing a sampling procedure, data analysis, and to indicate possible sources and causes of out-of-limit conditions. Preventive action is much easier than curing defects.

The original idea of having the supervisor of one shift check the hourly samples of the other was abandoned for two reasons. First, it would be merely a record of past action. No immediate correction could be made if extensive out-of-limit conditions were found. Second, when and if disciplinary action was needed on the basis of these results, one group would resent criticism from other than their own supervisor. Antagonism rather than cooperative effort toward correction would result.

As another part of the control system in this particular area, the supervisors check each scale daily before the start of operations for correct centering, correct counterweight, and correct beam action. In addition, a monthly check is made by an outside agency wherein all scales, including the check scale, are serviced. Obviously, good weighing requires good equipment.

Reviewing System's Accuracy

Accuracy of the manual operation is better than that of the overall mechanical operation to be described. Figures for the year 1956 on long goods packaging reveal good intershift correlation, and small percentage of outages. The slightly higher figures for 16 oz. as against 8 oz. result from difficulty in handling the larger amount.

However, it is felt that greater accuracy, along with seemingly paradoxical increased production, can be effected by the use of a new type Shadograph weighing device. Speed of weighing should be increased and double sensitivity over the same weighing band should result in better accuracy. Studies will be conducted to this end.

As mentioned previously, the same form is used for controlling weights on the short goods operation. This involves the packaging of several relatively free-flowing products, varying in length and weight from .01 oz.-.06 oz., by mechanical weighing scales. These scales consist of four six-header units and one four-header unit. Machines are not reasonable, thinking individuals and are subject to more variations and require more control, particularly those of a short trend nature.

In practice, the unit operator removes five consecutive packages from each header of the unit and records the individual weights. Pockets are sampled in numerical order until all have been sampled. This procedure is then repeated at regular intervals, three or five times during each hour depending upon the smoothness of the operation. Interruption of the five package continuity or taking all the samples in half the specified time followed by non-sampling during the rest of the period must be avoided or misleading information can result.

If the total of the five-figure column does not exceed or fall below a certain calculated value, no adjustment is made to the scale. This value has been predetermined by a study of each unit's capability for a specific product. Should adjustment be necessary and of a minor nature, the operator makes the adjustment and indicates this by placing a check mark over the column of figures which called for corrective action.

TABLE 1

	Day			*Night*		
	under		over	under		over
8 oz.	0.7	-	3.3	0.4	-	3.2
16 oz.	0.9	-	6.0	0.5	-	5.1

Should resampling show this pocket to continue out-of-control or to require adjustment more than twice in one hour, the packaging mechanic assigned to these units is notified.

What Mechanic Can Do

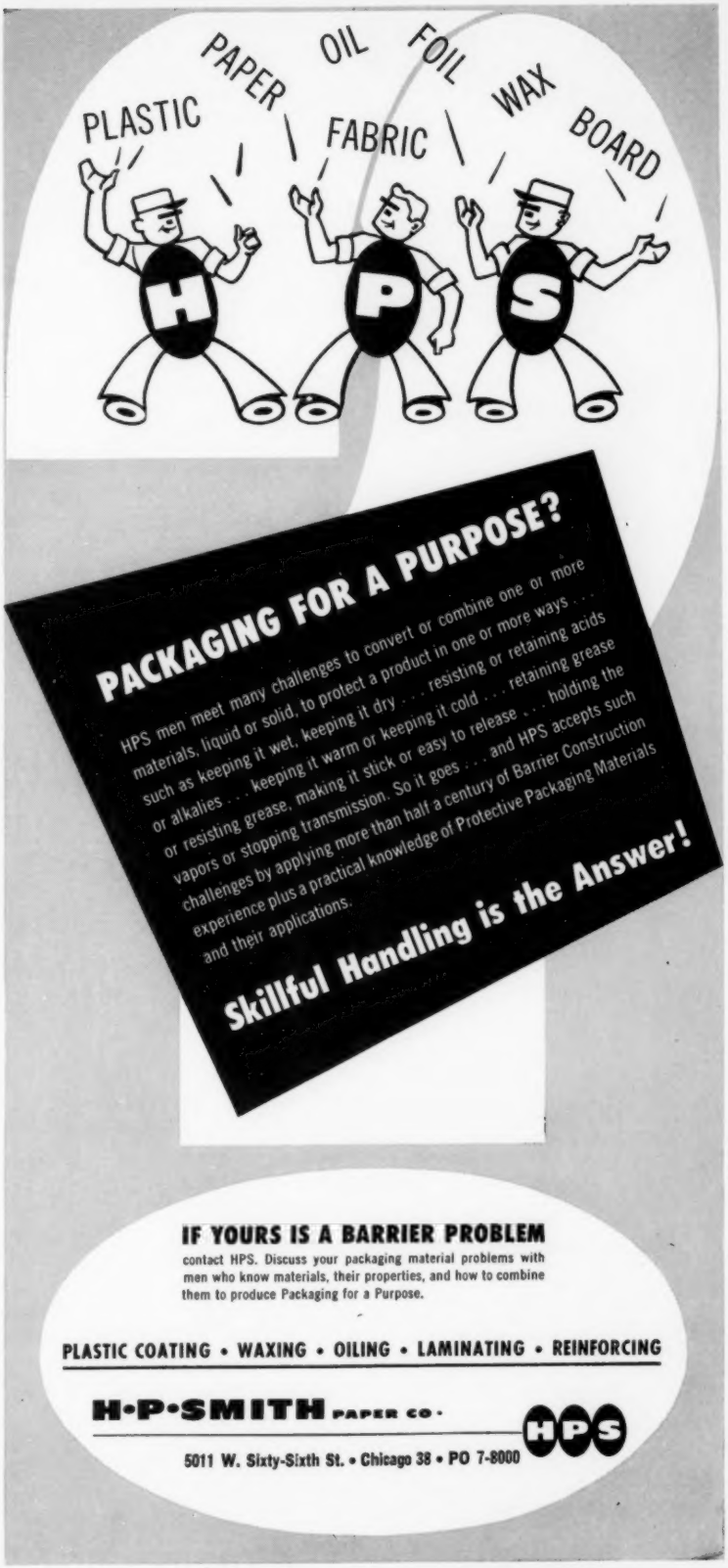
This individual is different from the one assigned to the long goods area. Should his effort prove unsuccessful, several courses of action are open. With the foreman's approval, the line may be shut down for repair or the offending pocket shut off while the scale continues to run. The operator then removes the empty cartons from the line.

Or the entire scale may be allowed to run and just the offending pocket subjected to 100% inspection for removal of out-of-limit underweight packages. This latter course would be valid for a short period until a shutdown for relief or lunch period when maintenance work could be performed.

The last recourse, if the pocket produces underweights, is to overweight the pocket, or if excessive overweights are being produced, to allow the loss until idle machine time is available. This involves relative costs between loss of production and idle personnel as against cost of product loss.

Repeated incidents of mechanical repair to one or more pockets indicate a definite need of overhaul of the unit by either our own mechanics or by a representative of the manufacturer. Also, an increase in range of the sample weights which persists even after repair or overhaul indicates a loss of scale capability and warrants serious consideration being given to replacements of the unit.

As mentioned previously, several items are packaged on one of the units. As the length and weight of the product increase, the scale capability usually decreases. These larger items are usually produced in smaller quantities and do not utilize full machine time. The cost of overweights is more than overcome by savings in capital outlay, floor space, maintenance cost and full machine utilization which extra units would entail.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". . . the package, when delivered was still damp and upon opening it, I discovered that the book was in excellent condition and, in fact, the paper cover on the book showed only a minor indication of having been damp, which probably would not have even been noticed had it not been for the outside appearance of the parcel.
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Excerpts of actual data taken from daily reports are shown in Figure 2 to illustrate some of the points.

Pocket #1 of Unit #2 presents a normal picture throughout the three-hour period illustrated. However, pocket #2 shows an increase as time lapsed until at approximately 7:45 a.m. an out-of-control situation arose. After adjustment, the pocket became normal until time of shutdown. The shutdown notation serves two purposes.

It explains the reason for no sampling and why a second adjustment was necessary on pocket #2 at 10:00 a.m. The start of an operation or resumption after shutdown usually shows an out-of-control condition. This is again shown by the data on pocket #1 of unit #1 at the start of the day's operation. The data on pocket #2 of unit #1 shows a condition whereby an out-of-control condition on the underside arose.

Frequent starts and stops of a unit are to be avoided if consistency of weight patterns is to be maintained. This was strikingly borne out on one occasion whereby a machine was packing faster than the dryer could produce the material. As a result, the unit was being shut down about every ten minutes to wait for material. The weight pattern after these stops and starts was very erratic.

The foreman was contacted and advsied by quality control to shut the line down until enough material was obtained for at least an hour's run. This was done with resultant better weights. In general, improper feed flow is a frequently occurring assignable cause for weight variation. However, excessive product variability, changing density, lumps of material and improper cleaning of weighing mechanisms have been found responsible on some occasions.

Table 2 relates the experience of Unit #2 with the various products as to percent of "outages".

Comparing Unit #2 with Unit #1 on packaging of Product A, it can be seen that Unit #2 is superior and, therefore, was chosen for the multi-product operation.

Unit #1		*Unit #2*	
under	over	under	over
0.4	13.9	0.3	7.6

Unit #1 on the day depicted in Figure 2 required a total of 18 operator adjustments for one shift as compared to only 6 adjustments on Unit #2. Unit #1 is now in the process of being replaced by a newer type unit, such as is used in packaging the eight ounce size of Product A. When installed, this unit will also be studied as to its capability for multi-product packaging.

Indicating New Machinery

The purchase of the replacement for Unit #3 was dictated by a worsening capability of the machine then in use. This older unit had been overhauled but continued to show wide ranges in the weight pattern. Frequent adjustments had to be made by the operator and an overweight pattern had to be used to avoid excessive underweights. The superiority of the new unit over the old is evident from the following summary of outages.

Old Unit		*New Unit*	
under	over	under	over
0.7	22.5	0.2	0.7

A pocket representative of each unit is detailed in Figure 3.

While only using four weighing heads, the output of the unit is the same as the old six-headed one.

The adoption of this new unit caused some changes in the quality control program. The sampling method was made more simple in that reduction from six pockets to four enabled the removal of five consecutive sets of samples from the four pockets at one time. This sample size of twenty packages provides both a weight picture of each pocket and a

TABLE 2

Product A		*Product B*		*Product C*		*Product D*	
under	over	under	over	under	over	under	over
0.3	7.6	0.1	14.1	0.6	13.1	0.3	21.8

Product A is the one for which the unit was originally purchased.

"lot plot" picture of 20/24 of one full case.

However, this unit provided such good weight patterns that it became monotonous and almost meaningless to record nothing but zero and "one" values. To maintain operator interest in the unit and the program, it became necessary to purchase a new balance for check weighing purposes which had twice the sensitivity of the previous one. Now we can get a better picture of the unit's true capability and promote operator attention.

Responsibility Of Foreman

As in the long goods packaging operation, the line foreman is responsible for his personnel and weight patterns. However, since other duties require his presence in other areas, a member of the quality control staff removes a case at random from each line twice a shift. These cases are plotted on the form as described under the long goods program.

As with long goods, a monthly summary is made and submitted to the production manager. Any out-of-control packages are returned to the individual operator, but should this pattern vary markedly from the operator's control sheet or an excessive number of outages be found, the foreman is notified.

In addition to the forms and procedures already mentioned, a final control is applied. Once each week, a personal check is made by sampling a case from each packing line on each shift. This data is recorded on the second form mentioned earlier and is presented to members of the management committee. Because of their varied backgrounds and interests, the data is presented pictorially and numerically.

The heavy horizontal lines represent control limits and the frequency distribution (histogram) feature gives a better picture than mere tabulation of the weight figures. The numbers opposite the histogram are used in computing the averages listed at the bottom. The line separating the histogram totals from the individual histogram items denotes the

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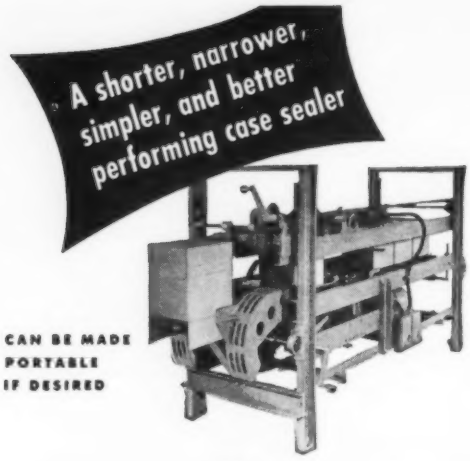
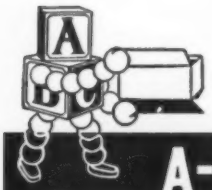


THE NEW A-B-C *Junior* CASE SEALER



The A-B-C Junior Case Sealer automatically seals corrugated shipping containers in only a fraction of the floor space ordinarily required. Operation is fast—trouble free—economical. A completely new flight chain construction virtually eliminates carton jamming . . . Three semi-automatic models are available to fit most case sizes. Write today for details and floor plans.

A-B-C PACKAGING MACHINE CORP.
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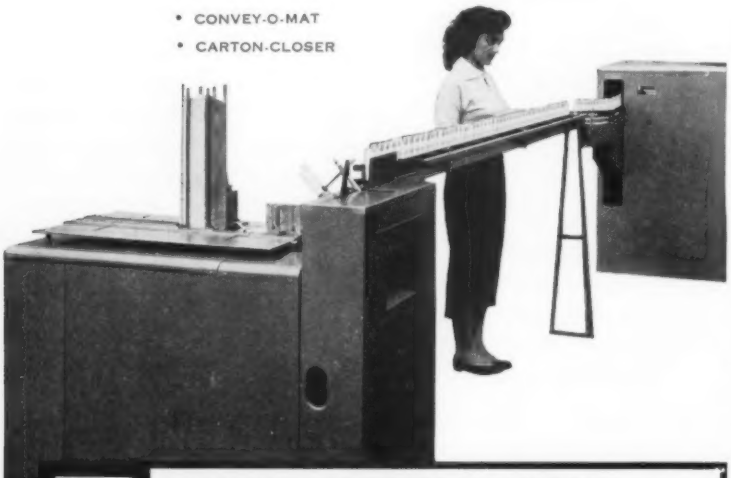

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Taking it to the line

Cutting through the mathematical and statistical aspects of quality control, a very important feature of Mr. Bremer's approach is that he carries quality control directly to the girls on the packaging line. Making the weight checks in their presence impresses them with the importance of a major result of quality control — namely, the accurate regulation of net weights.

range pictorially. The numerical range figures are also listed in case further analysis or computation is desired.

Do Weighing At Line

The actual weighing of the packages is conducted at the packing line rather than in the laboratory. It shows the worker that the quality control staff is actively interested in the program and also provides a means of communication. These people, because of their close daily association with the equipment and sampling routine, often have helpful, practical suggestions.

It is felt that the twice daily sampling of the short goods line and the overall weekly check by the quality control staff provide sufficient check of the inspectors. Too frequent or too close supervision implies to the worker a lack of confidence and can lead to a negative attitude.

Make Spot Checks

Packages found out of limits are given to the supervisor in the long goods department who relates the information back to the workers. Outages in short goods are returned to the operator. If excessive in this area, either the foreman or the mechanic is notified.

Throughout the foregoing descriptions, a statistical spot check technique is employed. At present, we do not use mechanical or electronic 100% inspection devices. This does

For more information circle No. 227 on Reader Service Card

not mean that this type of equipment has no merit or is not applicable in other industries. There are definite needs, such as in high speed packaging of 200-600 packages a minute or where product cost is high. Our rate does not exceed 95 per minute on short goods and product cost is relatively low.

Consider Human Factors

In dealing with material items, such as machines, graphs, data, a tendency arises to neglect the human side. No one individual through his own efforts can make a successful control program, but unfortunately one person can seriously hinder it or negate the efforts of others. Relations among executives, foremen, engineering, maintenance, quality control, and line workers must be one of cooperative team effort toward a common goal.

Reporting defects is to be looked upon as an aid toward correction, not as a club or solely critical mechanism. However, when necessary as a club to the minority, the action is based on fact not on nebulous individual judgment. Most people want to do a good job. Simple specifications, job descriptions, methods explanations, data presentation and communications are essential in getting the message across to them and the work done.

No personal responsibility

An important step in selling quality control to packaging line workers is to convince them that off-weight packages are no reflection on them personally. In this way a plant can educate its girls to report package weights as they find them and not to be tempted to adjust their written reports to show packages within quality tolerances. The girls must regard themselves as mere reporters of what packages weigh.

This is

PACKAGE ENGINEERING

case history: #7482 **client:** Ortho Pharmaceutical Corp.

problem: Better protection of valuable blood serum.

results: Container cost reduced from $11.00 to $2.50.
Shipping weight reduced from 35 to 19 pounds.
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Raymond R. Haugh is a graduate of Michigan State University with a B.S. degree in mechanical engineering and an M.S. degree in electrical engineering. Prior to joining the Quartermaster Food and Container Institute he was an instructor in electrical and mechanical engineering and a consulting engineer in industry. His previous associations include Kraft Egg Machine Company, National Egg Dryer Company, and Kraft Foods Company. He developed the mathematical Haugh Unit for measuring the quality of eggs, a standard unit of interior quality. At the QM Food and Container Institute, Mr. Haugh is a technical advisor and consultant to the scientific director. He is a registered professional engineer in Illinois and a member of the Institute of Food Technologists and the Institute of Radio Engineers. He holds twelve domestic patents.

Here is a way to calculate the stress pressure on the walls of rigid air-tight containers. This computer is an easy alternative to taking a container aloft in an aircraft or to testing it in a vacuum, in connection with the use of air pressure. Anyone concerned with air shipment and other conditions under which containers are subjected to temperature and altitude changes will find Mr. Haugh's study of distinct value.

Calculating stress pressures on walls of rigid containers

By Raymond R. Haugh,
Chief Applications Engineer,
Quartermaster Food & Container Institute for the Armed Forces, Chicago

This study, which was conducted by the Quartermaster Food and Container Institute for the Armed Forces, was designed to provide a quick and accurate method for calculating the stress pressure in pounds per square inch on the walls of rigid airtight containers due to the temperature changes inside the container plus pressure changes outside caused by different altitudes.

The word "container" is used as a generic term which includes all enclosed rigid airtight vessels such as tin cans, tanks, and airplane fuselages. It is assumed in the following calculations that the volume of the container does not expand or contract due to changing temperatures and pressures.

The pressure exerted by the trapped air in a rigid airtight container due to temperature changes is given by the formula $\frac{P\ V}{T} = \frac{P'\ V'}{T'}$ In this case V equals V′ so the formula becomes $\frac{P}{T} = \frac{P'}{T'}$ expressed in absolute units. As a result of this study, the Quartermaster Food and Container Institute has developed two container wall stress computers.

These computers show the effect of inside changing temperatures on the walls of the container for a given set of conditions. In addition, a determination of the sum of the inside wall pressure which varies as the temperature fluctuates and the outside pressure which reflects changes in altitude can readily be made. The computers have the following scales:

What The Scales Show

Scale *A* shows the inside temperature of a container in degrees F. from —80 degrees to 240 degrees.

Scale *A′* shows the altitude in feet from sea level to 35,000 feet and the corresponding temperature on Scale *A*. Above 35,500 feet altitude the temperature remains constant at —67 degrees F. Line *B* is the reference pivot line on which the pivot point can be located for any container under consideration.

Scale *C* shows the gauge pressures exerted in pounds per square inch on the inside wall surface of the container due to different temperatures at sea level.

Scale *D* shows the combined inside and outside stress pressures in pounds per square inch on the walls of a container at different temperatures and altitudes.

Scale *E* shows the altitude in thousands of feet from sea level to 60,000 feet.

To operate the computer (note Fig. 1) the following data should be known; first, the original temperature and gauge pressure inside the container; second, any change of temperature in the container; third, the altitude of the container.

How To Use Computer

The first step is to locate the pivot point (p). This is done by drawing a straight line from the original temperature in the container on Scale

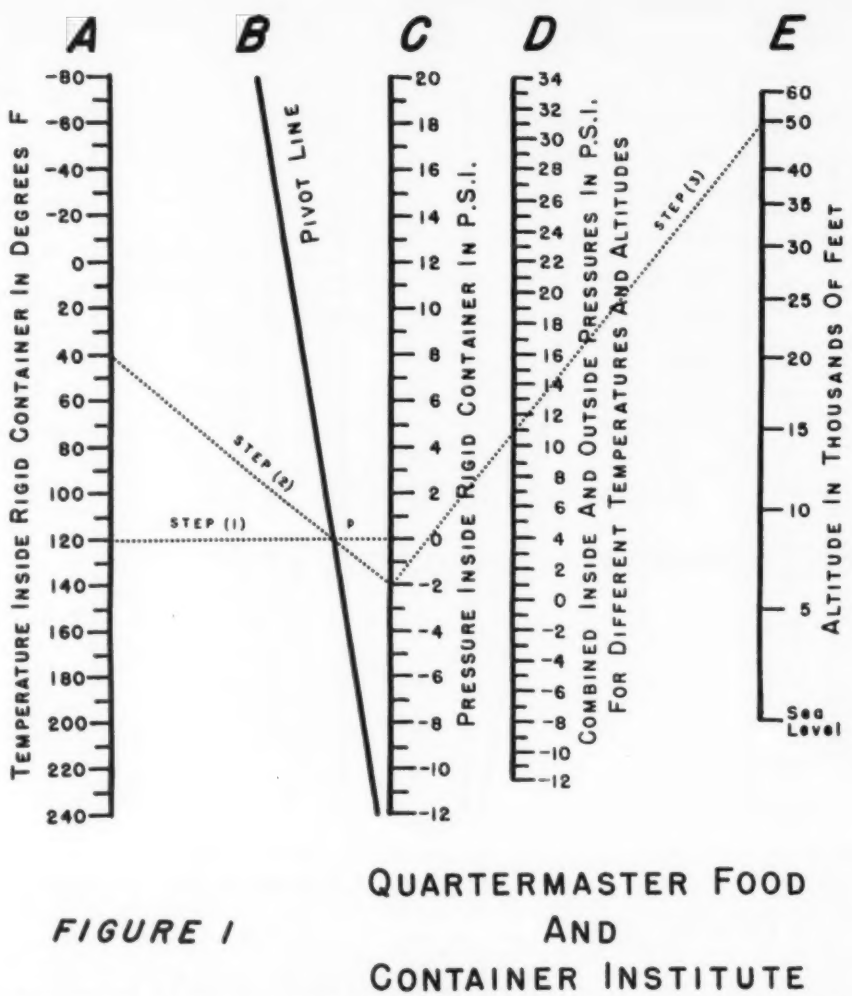

Fig. 1. To operate the computer a user should know (1) the original temperature and gauge pressure inside the container, (2) any change of temperature in the container, and (3) the altitude of the container. With these data at hand, he may proceed to use the computer as described in the text.

A to the original pressure in the container on Scale *C*. Where this line intersects the pivot line *B* is the pivot point (p).

After the pivot point has been located, a straight line is drawn from the existing temperature in the container on Scale *A* through the pivot point (p). Where this line intersects Scale *C* indicates the new pressure inside the container in pounds per square inch at the existing temperature.

Determining the total pressure on the container in pounds per square inch is accomplished by drawing a straight line from the existing pressure point obtained on Scale *C* to the existing altitude Scale *E*. The total pressure on the container in pounds per square inch is indicated where this line intersects Scale *D*.

Figure 1 indicates that at sea level a sealed container pressurized to 0 pounds gauge pressure at 120 degrees F. will register —2 pounds at 40 degrees F due to the contraction of the gas in the container. If this same 40 degrees F gas temperature existed aboard an aircraft at 50,000 feet, the total pressure on the container walls would be 11 pounds per square inch.

Finding Pressure On Walls

Referring to Figure 2, if a container is placed in the baggage compartment of an aircraft and is kept at any altitude for any length of time, it can be assumed that the temperature inside the container will be the same as the outside temperature. In this instance, the pressure on the walls of the container can be found in this manner: Connect the

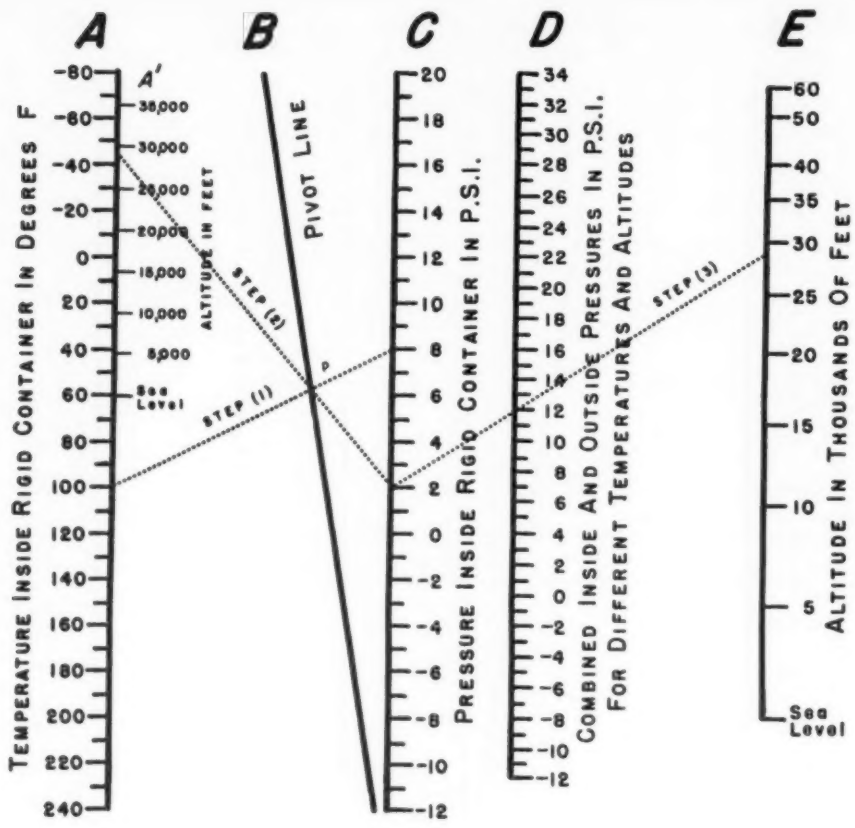

FIGURE 2

Fig. 2. If a container placed in an aircraft baggage compartment stays there at any altitude for any length of time, it can be assumed that temperature inside the container will be the same as the outside temperature. Proceeding from here and using the material described thus far in the text, the user may then proceed to determine the pressures as described in the balance of the text.

original temperature on Scale *A* by a straight line to the original pressure on Scale *C*. As has already been indicated, this locates the pivot point (p) on Line *B*.

On Scale *A'*, which indicates altitude to 35,000 feet, draw a straight line from the existing altitude through the pivot point (p). Where this line intersects Scale *C* gives the new inside pressure. The point at which a straight line from this point on Scale *C* to the existing altitude on Scale *E* intersects Scale *D* gives the total pounds per square inch of pressure on the container.

By following the same procedure employing the computer, Fig. 2, it can be determined that at sea level a sealed container pressurized at 8 pounds at 100 degrees F will drop to 2 pounds pressure if taken up in an aircraft to 28,000 feet and exposed to —46 degrees F outside temperature. The effect of this altitude of 28,000 feet will increase the total pressure on the walls of the container to 12 pounds per square inch.

Used as research tools, the computers will enable technologists to apply compressed air to the container equal to the total pressure obtained by the computer to determine the effect of total over-all pressure. This is a more efficient and practical means of determining the effect of the total pressure on a container than taking the container aloft in an aircraft or by testing it in a vacuum chamber, the methods used at this time. A significant dollar and time saving in the testing procedure has been made possible through the development of these computers.

Darwin F. Kaestner is a graduate of Marquette University with B.S. and M.S. degrees in chemistry. Prior to joining Lakeside Laboratories in 1941, he was with the City of Milwaukee in a technical capacity. During his ensuing association with Lakeside he held a variety of production and management positions before becoming plant manager. He is active in the committee work of the various associations of which his company is a member, including American Pharmaceutical Manufacturers Association and American Drug Manufacturers Association.

Here is a direct route to the standardizing of packaging materials and methods: Author Kaestner started with the dimensional specifications of individual pharmaceutical tablets themselves — realizing that all ensuing packaging line operations depended on uniformity of product in order to attain peak standardization benefits. Besides explaining just how to go about a standardization program, his article sets forth significant, workable guideposts to package selection and packaging method determination.

A practical approach to packaging standardization

By Darwin F. Kaestner,
Plant Manager,
Lakeside Laboratories, Inc.,
Milwaukee

By carrying out a plant-wide standardization program, we are gaining a number of efficiencies and advantages in our packaging operations that we did not have previously. Before launching the program we had many variations in tablet size, container size, label usage, and other categories of packaging materials.

By standardizing wherever possible, we have fewer materials, much less change-over time on our lines, a more limited number of packaging operations, less investment in change parts, a plant easier to maintain, and closer control over all phases of our operation. Underlying the entire effort is our standardization of tablet sizes.

Start With Tablet Spec's

Setting rigid specifications for the thickness and outside diameter of the various tablets we manufacture (as well as reducing the number of tablets themselves) is absolutely necessary to the successful consummation of a package standardization program in a plant like ours. At one time we had between 10 and 20 different size tablets. We have reduced these to six principal sizes, and 18 different tablets fall within these six categories.

We think that this dimensional control of our tablets is so important that we even let our specifications determine the physical dimensions of the products we are about to bring out. In other words, when our research department is going to develop a new pharmaceutical item in tablet form, its dimensions must be within our standards of thickness and outside diameter.

Our reason for insisting that new products fall within our established standards is simply that a tablet of any other size would disrupt our production and packaging operations. Since those who conduct our laboratory research and prepare our clinical samples in advance of final acceptance know that their product must fall within our standards, they develop the formulations of their new tablets accordingly.

Thus we not only started our package standardization program with the product itself, but carried that standardization all the way back to the initial formulation of a new product.

Getting Correct Bottle Counts

The next phase of our standardization effort was developing the correct count for each bottle. In other words, after establishing uniformity of individual tablets, we determined the number of tablets going into each bottle. Hand in hand with the determining of bottle fill is the selection of bottles themselves. These two aspects of our program are closely inter-related because having an exact

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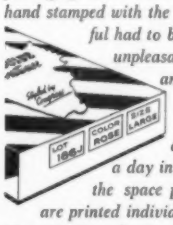
Don't keep the inspectors waiting . . . *is a cardinal rule on any production line, especially at Congress Sportswear where the final inspectors also do the packaging. But boxes were being laboriously hand stamped with the result that a whole roomful had to be kept on hand—a costly, unpleasant situation from every angle. Now with a Markem 45A box marker, imprints are made twice as fast and look far better; $5.00 a day in labor alone is saved, and the space problem is solved. Orders are printed individually, as they are needed. Goes to show how good marking can help all along the line, from production to point of sale.*



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control of tablet dimensions permits having bottles of similarly controlled capacities. These include bottles containing counts, such as ten, 25, 50, 100, and even drums of 5,000.

Where you have a large and heterogeneous collection of bottles and wish to standardize them into a group reasonably small in number, there is no shortcut you can take. We found the only sure way of doing it was to take the bottles physically and actually count out the tablets one by one to see how they fit into particular bottles. No charts, drawings, tabular presentations, or other devices commonly associated with package standardization programs can take the place of making the physical count with an actual container.

Watch Production Realities

In standardizing on our bottles and in reducing their number, we found it absolutely necessary to consider the realities of production and packaging. Some of the things we considered in evaluating our choice of bottles included the following: Ease of filling, availability of filling equipment, bottle stability, the possibility of its tipping over on a conveyor, availability of bottles themselves, differences (where pertinent) between hand filling and machine filling, ease of handling, sufficient head room for cotton, and so on.

Attention to the method of filling is very important. A typical machine filling operation results in a lower level of fill in a bottle than a manual fill because the tablets go in one by one more or less in rotation. In contrast, by hand filling they go in with a somewhat jumbled pattern and do not fit into the bottle with the same tightness of fit that you get with a machine fill.

Fill Height, Cottoning

Another phase of our standardization program was determining the correct height of fill for each bottle. This affects the cottoning operation and in turn the acceptability of the product by the using druggist. His ease or difficulty in removing the cotton influences his acceptance of a product, such as one of our tablet items. By determining a correct height of fill for each bottle, we were next able to determine the cottoning. As a result, we have standardized on our coil cotton and on the number of inches of cotton each bottle takes.

We use six- and 13-gram coil cotton. For example, all of our Blake bottles up to 1¼ ounces use six-gram cotton and all such bottles over 1¼ ounces use 13-gram cotton. We have determined the number of lineal

An integrated approach

To anyone acquainted with the subtleties of packaging standardization, it is apparent that one of the most significant points of Mr. Kaestner's program is the totality of the effort. In other words, he and his associates started with the materials themselves, worked out standardized packaging, then standardized on work methods and packaging techniques — carrying the standardization all the way to the loading platform. The conclusion is inescapable that packaging standardization must be considered in all its elements. Merely doing part of the job is not enough and the only way to get the most out of the entire program is to follow it through all stages, just as Mr. Kaestner did.

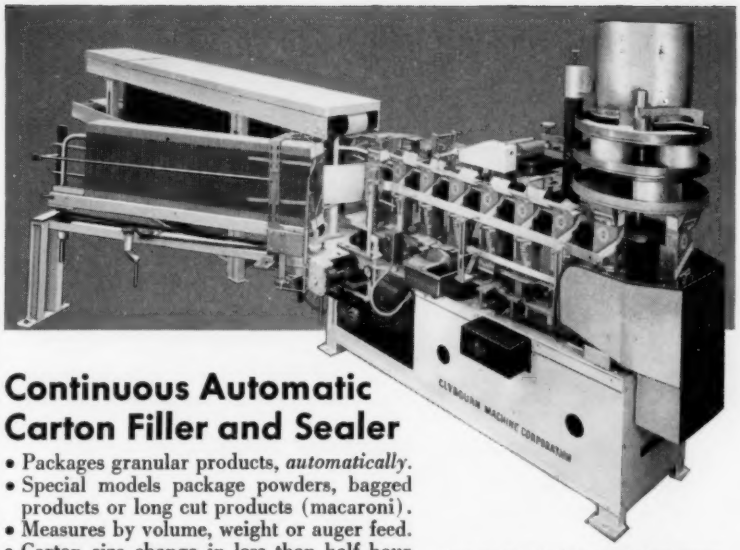
inches each bottle receives and by knowing the yield we can calculate our cotton usage very closely.

Anyone having to cotton his bottles should keep in mind that the basic purpose of the cotton is to suppress the movement of tablets within a bottle. If there is not enough cotton, the tablets rattle around and conceivably may break. On the other hand, if there is too much cotton, the druggist or other user must take tweezers or a pliers to get the cotton out before being able to remove the tablets. This is not conducive to user satisfaction.

Problems Of Capping

Our attention next focused on the capping operation. It is a slow job to change over a capper since rails must be reset, the chute and chuck must be changed, and similar mechanical and operational adjustments are necessary. On the other hand, in making fairly slight changes of capping sizes, not all of these adjustments have to be made.

For example, in going from a 20-



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millimeter to a 22-millimeter cap, changes are necessary only at several critical points rather than at all points on the machines. This greatly cuts down the amount of change-over time involved and our standardization program took this into consideration.

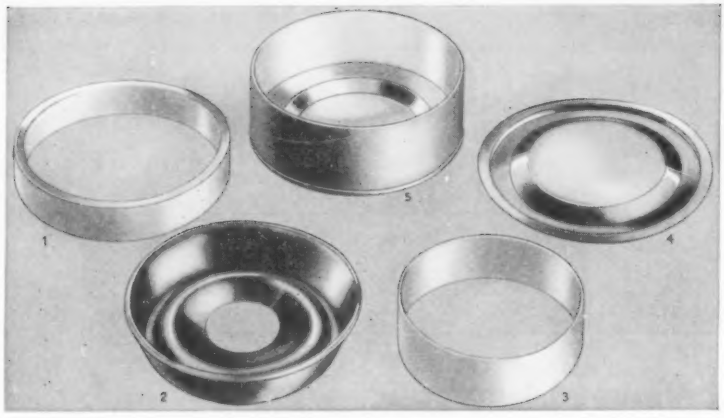
In working out standardization for our labeling operation we eliminated our label differences to a point where all bottles of one size take just one dimension of label. A curious finding of our standardization effort was the ease with which minor variations in label dimensions crept into our plant over a period of time. For example, we found that two labels going on the same bottle varied by just 1/16th of an inch. Now the label dimension is the same for both bottles.

A special problem in pharmaceutical container labeling is the meeting of federal regulations and the necessity of providing adequate space for all of the necessary information on a label. Thus we had to consider each label not only from the standpoint of the container dimensions but also from that of meeting federal and other requirements.

Carton, Box Usage

We have now standardized our folding carton usage so that counts per carton are standard. In order that each carton may serve a number of products, we do not always carry identifying copy on our cartons. In some instances we use a window carton so that a bottle label shows through the window to identify the products within this carton. This permits quick identity and eliminates the necessity of a premarked carton. Because bottles and labels are standardized, the label shows up at exactly the right spot in the window of the carton — which itself is standardized.

To simplify the work at the end of our packaging lines, we standardized on pallet loads of finished goods. These loading patterns rest on an engineering basis and have been developed to avoid spilling of loads. Each distinctive carton shape has its particular method of loading. Our girls learn these patterns quite readily. Another advantage of the



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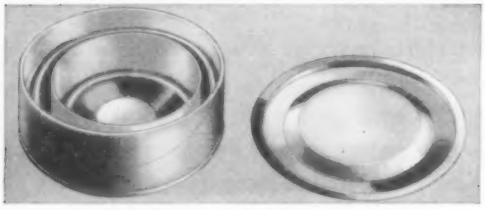

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Each part is designed for a specific purpose. The outer support ring (1) is placed in the metal bottom container (5) . . . the diaphragm (2) is placed with its outer edge resting on top of the ring . . . the inner support ring (3) is placed inside the diaphragm, ready for the cover (4) as illustrated above.

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The completed package, at left, resulted in labor savings of 85% and in increased packaging production up to 400%.

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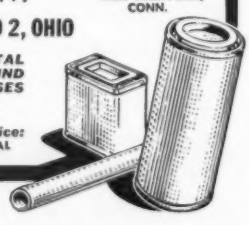

standardizing of pallet loading is that it gives us a uniform count per load as well as a uniform height.

A phase of our standardization on corrugated boxes involves the use of rubber stamps. We have tried a wide range of packaging line marking equipment, both on the line and off, and have found that for our operation nothing is quite as fast as using a rubber stamp. Aside from the economy and speed, another advantage is that it forces a girl to look at the work as she stamps it. Simple as all this is, it is the most practical and expeditious method we have located.

Developing Work Methods

We have carried our standardization program into our packaging line methods. While every girl on our lines has to be able to do any job, each one becomes a specialist in her particular work and handles as a regular assignment as few jobs as possible. We have injected quite a bit of work simplification into our lines as a result of the standardization program and have simplified and reduced the total number of operations.

Every package in our plant is assembled or otherwise handled and completed in a definite, prescribed manner, done in accord with written specifications. We permit no deviation from the written instructions. Because these are standardized and because the girls specialize in their work they become quite adept at their particular tasks. We find that rotation from job to job is unnecessary because there is enough variation in the work load in the course of a day to prevent any one job from becoming monotonous to the girls.

This specialization also carries responsibility. Each girl becomes specifically responsible for her part of the job. And the line or group supervisor to whom these girls directly report sees to it that they meet these responsibilities. As a rule, our lines work progressively so that each girl does her particular part of the work. The group supervisor corrects any deviations and when the foreman finds something requiring attention he deals with the group leader

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rather than the girl herself.

In addition to supervising actual operations, the group leader also is responsible for keeping all records of production, for maintaining the correct counts, and keeping records such as downtime. She also does the recording necessary to the incentive system. The policy of our plant is to see that the girls definitely earn money on their respective incentive programs and we supervise the work in order to balance it out so that the incentives may be met.

Housekeeping Responsibilities

A distinctive feature of our operations is that each girl is responsible for the housekeeping in her area. When a bottle breaks or tablets spill, she gets a broom and cleans it up immediately. There is no floor man or maintenance man available and she does not wait until the end of the shift for someone else to clean it up. We insist that she does it then and there. It is sometimes contended that this disrupts production, but we think production is more likely to be disrupted or impaired by temporarily ignoring the bad housekeeping than by doing something about it immediately.

Obviously we insist on pharmaceutical standards of cleanliness with our personnel and we insist also that they keep their equipment and areas in the same condition. We feel that if spills and breakage are allowed to accumulate during a day, the conditions actually become worse, with the result that there is a cumulatively bad effect on overall production.

Similarly, our machine operators are responsible for the physical care of their equipment at the end of a day or the end of a run. In addition to being responsible for machine cleanliness, they also must see that the equipment is dusted and covered, that the switches are turned off, and that any material in it is removed — either by the normal filling operation or by taking it out.

One of the benefits of our overall standardization program is the simplification of our packaging machinery operations. As a result of our standardization, we have reduced

No substitute for third dimension

Even though many packaging experts have used charts and tabular presentations with considerable success while working out container reduction and standardization programs, there still is no substitute for making the actual comparisons and eliminations with the containers themselves. In spite of all the engineering aids available, Mr. Kaestner's experience makes it abundantly clear that the one certain way to ascertain the suitability of a particular container is to make a specimen fill with the product to go into it. Even though it involved considerable personal overtime, he found that the success of his project depended on his actually filling each container under consideration.

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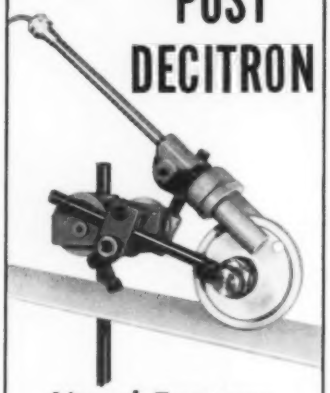

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the number of change parts, we have cut out the lag time involved in change, and we have eliminated the waiting for parts. We have refined our operational techniques so that each machine does as much as possible without manual change-over.

Scheduling Procedures

Another phase of our standardization program involves our scheduling procedures. We group together runs of different products using the same bottles. In this way the change is merely of product and labels rather than of containers. For example, it may be necessary to change only the count going into a particular bottle. As a result, we go from product to product without machine change-overs. Similarly, we try to make our runs as long as possible without getting excessive inventories.

When a fairly involved machine change-over is involved, we inject our short order production runs to occupy the working time of the girls while the change-over takes place. Ordinarily we have a number of these comparatively short jobs entailing primarily manual work and we fit these into our schedules as fillers from time to time.

Assigning Of Lines

To illustrate our primary insistence on product standardization, we put all of our Blake bottle production on the automatic tablet line. All long run products go to this line. In fact, we will not put other bottles or products on this line because doing so would disrupt our normal production. In other words, we effectuate our standardization by insisting that certain products go into certain packages.

As emphasized above, an all important phase of our program is our control of tablet thickness and outside diameter. For example, if a thickness has a variation of more than 20,000ths of an inch within a particular class, it ordinarily throws that tablet into another class. Each class represents a different diameter. Everything in that diameter has the same thickness.

Closer Batch Control

For example, a tablet which has an outside diameter of ¼ inch, has a thickness of 130-135 thousandths of an inch. If it is necessary to have a tablet 150 thousandths of an inch thick, the plant must go to the next diameter in order to get that thickness. All this merely emphasizes a few of the results of our standardization: We now have much closer batch control, much less work being out of tolerance, and a much simpler job of quality control than we had before standardizing.

Package standardization starts with the product

It is impossible to estimate how many packaging difficulties are avoided by establishing product dimensions and requirements in terms of the packaging needs. This drives home the importance of letting the packaging experts get into the product development picture while the whole thing is in the paper stage or even still under verbal discussion. It is a matter of common knowledge that considerable expensive and inefficient packaging is due to the fact that the packaging specialists were not brought into the product development picture until after dimensions, weights, configurations, and the like, had been established. Mr. Kaestner's experience emphasizes the advantage of letting packaging standardization start with product development.

Announcements of machinery and products

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2. Now, *circle* the corresponding numbers on the postcard, located inside back cover.
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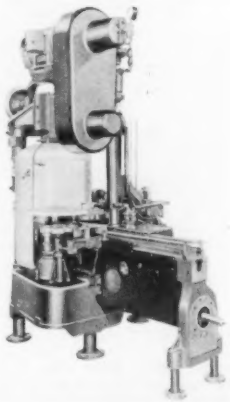
Can Closing Machinery

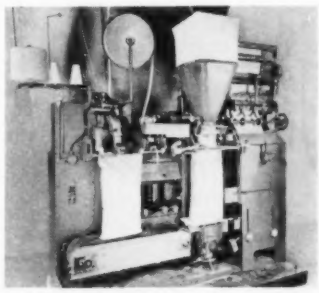
Continental Can Co. announces its 450-HCM six-spindle closing machine, which handles can sizes from 202 to



404 diameter and from 200 to 708 high. Continental says the unit has speeds up to 600 cans a minute, depending on can size and the product being packed. It consists of a main drive, can feed table, filler floor stand, basic end marking unit, 90 degree discharge including idler sprocket, as well as basic change parts. Continental says it is suitable for closing all products except beer and carbonated beverages. Circle No. 1.

Multiwall Bag Packer

St. Regis Paper Co. reports development of its VredOMatic packer for open mouth multiwall bags. It positions, opens, fills, closes and sews (with or without tape) open mouth multiwall bags holding 25 to 125 lbs. of granular, free-flowing materials, and with auxiliary equipment can handle semi-free-flowing materials, according to St. Regis. Operation is automatic since a bag moves under the filling spout and through the sewing machine automatically. The company says production capacity is from 6 to 12 bags a minute, depend-



ing on material, bag capacity, and a proper machine installation. Circle No. 2.

Frozen Food Wrapper

Nashua Corp. announces Zerac, a new plasticized frozen food wrapper which has built-in sealing strength, according to its developers. Nashua says it has a positive lock, in order to prevent excessive dehydration of frozen foods after the packaging operation. Nashua also points out that its new material withstands excessive package punishment where repeated handling is necessary. Circle No. 3.

Metal Cans With Labels

George D. Ellis & Sons, Inc. reports availability of a variety of its Label-Stik cans, which have built-in labels

and which are seamless, made of one piece. Its Style No. 10 cans are available in capacities from ¼ oz. to 16 oz.; Style No. 20 from ½ to 16 oz., and Style No. 40 from ½ to 8 oz. These cans have white labels that may be printed or not. Ellis says that a feature available in these cans is the outwardly curled Sani-I-Safe edge designed to eliminate the groove that would catch and hold the can contents. Circle No. 4.

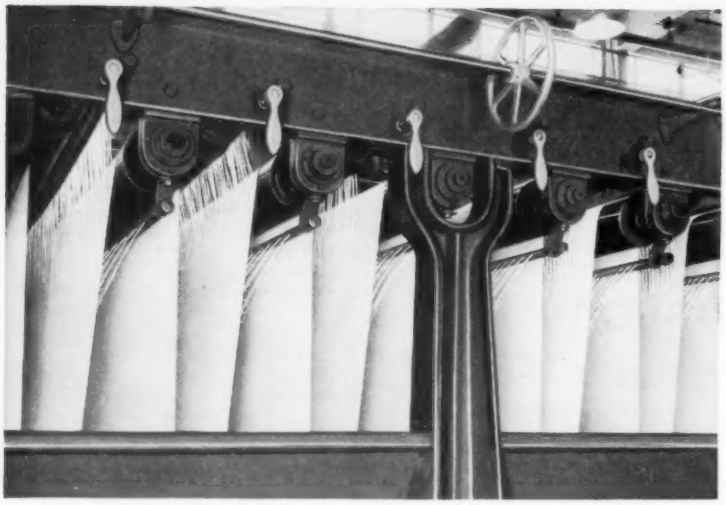
Package Marking Equipment

American Marking Corp. announces its Micro-Printer Model 206 for code dating, pricing, trade mark applica-

tion, and the printing of ingredients on cartons. The unit's overall dimensions are 6″ long, 3½″ wide, and 5″ high, with a 6″ plate cylinder circumference. It incorporates flexographic press principles. Maximum imprint per revolution of plate cylinder is 1″ wide by 6″ long. Two micrometer scale dials permit precision roller adjustments, according to American. The model also makes impressions on such materials as cellophane, polyethylene, aluminum foil, and coated papers. Circle No. 5.

Dispensing Plastic Container

Lermer Plastics, Inc. announces a new type of plastic container that dispenses capsules, pills, ball bearings,



For PURITY we wash Patapar®

In the manufacture of high wet-strength, grease-resisting Patapar Vegetable Parchment, washing is a routine procedure. The washing is done with continuous sprays of sparkling, freshly filtered water to assure the cleanest sheet scientifically possible.

Made from 100% pure cellulose, Patapar is completely NON-TOXIC, odorless and tasteless.

Many different types to fill special needs

Produced in more than a hundred different types, Patapar offers qualities that meet an amazing range of specifications and needs.

Example: *In food fields*, colorfully printed Patapar is outstanding as an eye compelling packaging material. Butter, cheese, sausage, ham, bacon, lard, poultry, margarine are a few of the products that entrust flavor and quality to its protecting folds.

Furnished plain or colorfully printed

Patapar comes to you plain or beautifully printed by letterpress or lithography. We will reproduce your present wrapper design or create a colorful new one for you.

For detailed information and samples write us on your company letterhead, telling your requirements.

Patapar®
Vegetable Parchment
HI-WET-STRENGTH · GREASE-RESISTING

OTHER PATERSON PRODUCTS
*PATAX waxed paper
*DURAPAK parchmentized cellulose
*PATERSON absorbent paper
*PARCHKIN art parchment

PATERSON PARCHMENT PAPER COMPANY
Bristol, Pennsylvania
Sales Offices: New York, Chicago
West Coast Plant: Sunnyvale, California

HEADQUARTERS FOR VEGETABLE PARCHMENT SINCE 1885

or similar small units one at a time. It has a patented rotating closure which is fitted on a plastic container. Lermer says the plastic is shatterproof, and is available in various colors, clear or opaque. Containers may be decorated or printed during manufacture. Circle No. 6.

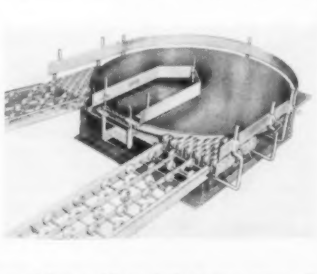
Heat Sealer

Superior Machinery Corp. announces its portable, self-contained heat sealer. It is available in two models, one

for bags up to 8″ and the other for bags up to 12″. Superior says it is thermostatically controlled to provide steady even heat for uniform sealing. Although designed for polyethylene and similar materials, the maker states that additional attachments are available to handle cellophane. It is foot-operated in order to free both hands of the operator. Circle No. 7.

Package Turntable

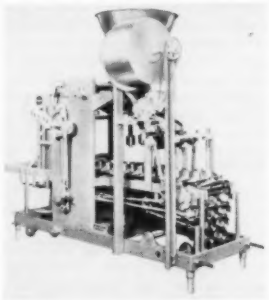
Samuel Olson Mfg. Co., Inc. reports development of a new turntable designed to transfer packages or loads



at either a 90 or 180 degree turn. It has a 48″ diameter disc which is direct-driven by a gearmotor at 25 rpm to produce approximately 300 fpm rotation. Ball bearing wheel feeder sections assist in the transfer of packages from conveyor to disc and back to conveyor. Adjustable height outer and inner guards permit the turntable to handle packages of varied heights. The inner guard is pivoted at the center. The unit requires floor space approximately 5′ by 5′. Circle No. 8.

Filling Machinery

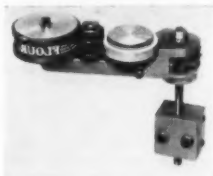
Hope Machine Co. announces a high speed, heavy duty filling machine to pack fibre containers for such viscous



products as grease, caulking, roofing cement, or buffing compound. The new unit, known as Type 27 cartridge filler, features an unscrambler barrel, provided to supply lids to the feed chutes mounted above each filling line. A typical container filled is 8½" long and 2" in diameter. Production per minute varies from 20 to 40 on a two-line unit and up to 70 to 100 on a six-line unit. Circle No. 9.

Marking Unit

Wm. A. Force & Co., Inc. announces its Model 3AC 3/8, designed for the imprinting of light packages and

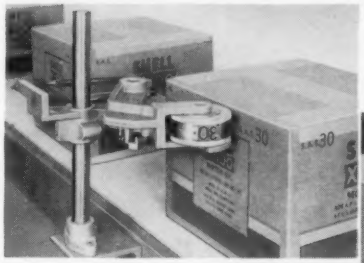


other items requiring type impressions not over 3/8" in height. It is a double friction drive unit with print wheel, inking roll, and fountain roll, all driven by the product or package as it passes under or alongside the marking wheel. It takes interchangeable rubber type or logotypes. It may be mounted horizontally or vertically and by changing the assembly on either right or left side of the conveyor line. Circle No. 10.

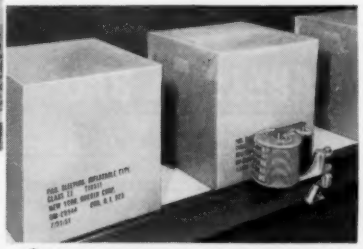
Vacuum Forming Machine

Low-cost marking attachment pays for itself in weeks...saves thousands of $ every year

Imprints 1, 2 or 4 sides of cases in single pass



◀ **ROLACODER twin-action markers ... for imprinting codes and lot numbers on 2 or 4 sides of cases simultaneously ... without requiring cases to be turned.**



Friction-driven ROLACODER markers do your marking automatically ... save cost of manual stencilling or stamping. Designed for easy do-it-yourself installation on existing conveyor lines, case-sealers, etc. They use quick-change rubber type or dies, hold 8-hour ink supply.

▲ **ROLACODER single-side marker for accurate spot imprinting of brand names, varieties, code-dates, lot numbers on cases, cartons, fibre drums, bags, etc.**

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Dept. S, Hillside 5, N. J.

In Canada: **RICHARDSON AGENCIES, LTD., Toronto & Montreal**

Automatic Production-Line
CODING, MARKING, IMPRINTING MACHINES

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The Number One Selection

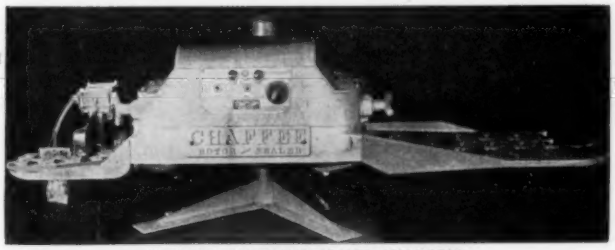
The CHAFFEE ROTOR-SEALER

WHY?

Because it seals all popular sealable materials. You may change your package from sealing bag top labels on cellophane, polyethylene, pliofilm and saran to the sealing of unsupported films, viz; cellophane, polyethylene, pliofilm, vinyl by simply turning the thermostat dial.

Hole Punching Device →

Coder-Dater →



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MILITARY APPROVED SEALER AVAILABLE

RALPH CHAFFEE & CO.

2358-2360 MARKET ST. • SAN FRANCISCO 14, CALIF.

REPRESENTATIVES IN PRINCIPAL CITIES

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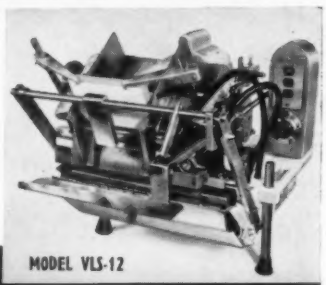
LABELS on BAGS sealed *Faster, Better!*

The machine with $500 in EXTRA FEATURES at no extra cost!

A heavy-duty heat sealer that is ruggedly constructed for safe, foolproof operation at speeds up to 40 per minute! Folds top of bags up to 12" wide (any length) and attaches a saddle label while sealing — all in one automatic operation! Makes neat, strong seals with cello, poly or saran. High speed motor, full scale vacuum pump and positive spring action on folding bar —

PLUS SIX EXCLUSIVE ENGINEERING FEATURES

WRITE FOR DETAILS!



MODEL VLS-12

MERCURY HEAT SEALING EQUIPMENT CO.

2601 N. HOWARD ST., PHILADELPHIA 33, PA.

YEARS AHEAD IN DESIGN!

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WRIGHT *Electronic* **WEIGHER**

New **WRIGHTRONIC** provides an accuracy reliability previously unattainable at comparable speeds. It represents five years of engineering, development, test, and production.

Speeds up to 200 per minute.
Range three grams to 50 or more pounds.

At present, the element is available for custom applications requiring multiple installations and can be designed to be used with existing machinery.

New application inquiries are invited.

Wright Machinery Company
Division of Sperry Rand Corporation
Durham, North Carolina

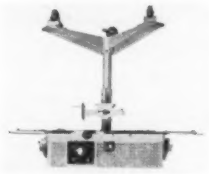
Atlas Vacuum Corp. announces its Model A-14 vacuum forming machine, a miniature unit suitable for display, control work, testing, and demonstration of sheet materials and the like. It has a forming area 14" by 14" and can drape draw up to 6". It has a solid weld body and contains a 2.5 cfm pump. There is a special pivotal heater that allows adjustable heights for better heat control. Atlas says that a uniform heater construction gives improved heating. Circle No. 11.

Synthetic Adhesives

Adhesives Mfg. Industries, Inc. reports development of new synthetic adhesives: Its Superstiks 5650 is designed for laminating aluminum foil to all type of paper or fibreboard, as well as for can winding. Its Superstiks NR 70 is for applying labels to any metal surface by hand or machine. The maker says this material is waterproof when the film dries. Circle No. 12.

Band Heat Sealing Unit

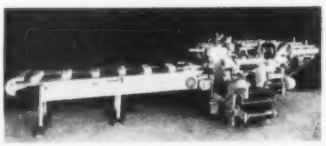
Globe Heat-Seal, Inc. announces its Band Seal-It, a unit designed to seal materials such as polyethylene, Saran,



cellophane, and other films having wide differences in sealing temperatures. Globe says that continuous traveling steel bands grip and carry the film through the sealing and cooling cycles, maintaining speeds up to 720 lineal inches per minute on these different materials. The machine operates horizontally through a 90 degree arc. There is a speed indicator on the panel to permit synchronization of the unit with a conveyor belt. Circle No. 13.

Wrapping Machine

Battle Creek Packaging Machines, Inc. announces its 47-H wrapper, designed to package a variety of prod-



ucts, such as baked goods, buns, rolls, and the like, without boxboard or other support (such as cartons, trays, cards, etc.) at speeds up to 65 packages a minute. Battle Creek says the unit may be equipped with such features as a labeler, a label imprinter, and one-shot lubrication. It notes that a simple changeover using hand wheels and interchangeable tuckers

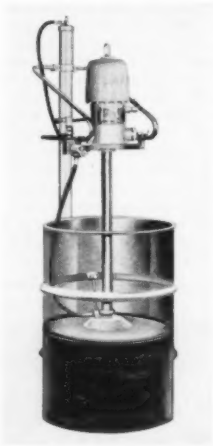
makes possible precision wrapping. Circle No. 14.

Paper-Plastic "Sandwich" Material

Monsanto Chemical Co. announces development of a foamed styrene and paper "sandwich" material, known as Fome-core Board. It consists of a core of stiff foamed styrene plastic with a sheet of specification kraft paper on each side. St. Regis Paper Co. is participating with Monsanto in this development, which will be used in containers having high compression strength under conditions of severe humidity. The developers predict these containers will withstand long distance shipping under high humidity conditions. Circle No. 15.

Drum Pumping Unit

Gray Co., Inc. announces a new type pumping unit designed to dispense viscous materials such as caulking

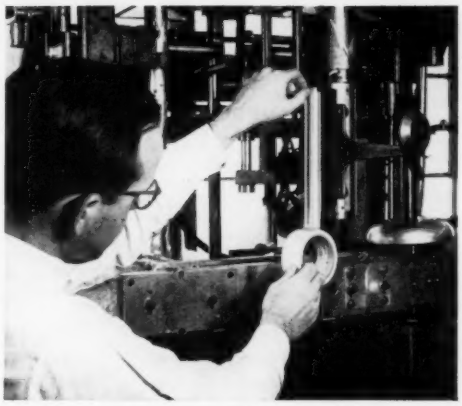


compounds, putties, semi-fluid sealers, and adhesives, from 55 gal. drums. This unit, a Graco inductor, starts at the top of the material in the drum. Then, combined with an air powered Graco pump, such an inductor in effect sucks its way to the bottom, scraping drum sides and evacuating the material from its drum. Pumps for use with this inductor are available in power ratios to meet all volume and pressure requirements, according to the producer. Circle No. 16.

Sensing Control Unit

Electro Products Laboratories, Inc. announces its 4951-RAC extra-sensitive proximity transducer control unit.

This is designed for use with control



With TEMP-R-TAPE®
Apply a TEFLON surface in seconds . . . end sticking and build-up

Teflon's non-stick surface is now available in an easy-to-use adhesive tape called Temp-R-Tape. On heat sealing bars, flat plates or wherever a slippery surface is needed, Temp-R-Tape ends sticking and build-up. Temp-R-Tape is odorless, tasteless, non-contaminating, has −100°F to 400°F range. ¼" to 12" wide, .006" or .013" thick. Recommended by machinery and film producers!

Many different uses for Temp-R-Tape in packaging.

ON HEAT SEALING BARS
ends sticking and spoilage, replaces in seconds, cuts down time.

ON FORMING PLATES
reduces static electricity and wear.

ON FORMING DIES AND BARS
cuts lint and glue build-up.

ON GUIDE RAILS
ends scratching, quiets operation.

MANY OTHER USES
send for folder and sample.

FREE SAMPLE *and folder . . . write, phone or use inquiry service.*

A PRODUCT OF CHR THE CONNECTICUT HARD RUBBER CO., NEW HAVEN 9, CONN.

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ABSOLUTELY ACCURATE 2 VALVE FILLER

Elgin EARNS ITS WAY

"TWIN"

The Perfect Filler for Glass, Plastic and Tin containers. Accurate Ingredient Fill for Aerosol Packing

The Elgin "Twin" is a rapid, faultless producer. This Filler features a unique method for controlling the piston stroke, resulting in two speeds: high-speed on cylinder filling, low-speed on container filling. Easily adapted to a broad range of products and container sizes, the Elgin "Twin" insures an accuracy of fill you can rely on for either liquid or viscous products. Easily cleaned —ideal for light or heavy packs and ideal for aerosol packing—the Elgin "Twin" earns its way in labor and product savings!

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circuits, electrical machinery, batch counters, and electro-mechanical counters. It works on a principle similar to a military mine detector and is used to operate switches or drive electronic devices, according to the manufacturer. High frequency, carrier operated transducers for general applications and a hollow coil transducer for chute applications are available with the unit. Circle No. 17.

Variable Speed Reducer

Revco, Inc. reports development of a motorized speed reducer providing stepless speeds from true zero to 400 rpm. It consists of a Zero-Max variable speed reducer built onto a G.E. 48-frame motor. The motor drives the Zero-Max through 1:1 helical gears running in oil inside the Zero-Max housing. There are eight basic models, delivery from 10 to 30 inch pounds torque with CW or CCW output shaft rotation. Circle No. 18.

Automatic Packaging Unit

Peters Machinery Co. announces a new automatic packaging unit designed to operate in conjunction with its GT sandwiching machine. Peters says that this unit automatically divides cookie sandwiches into four rows, then counts, stacks, groups and loads them into cellophane bags, cartons, or trays. The manufacturer also states that this sandwich packaging unit can be coordinated by conveyors with its cellophane bag sealing and header applying machines or with wrapping machines for cartons or trays. Circle No. 19.

Carbon-Coated Stencil

Weber Marking Systems, Div. of Weber Addressing Machine Co., Inc., announces development of its Carbon-Cote Tab-On stencil as an aid to labeling or addressing package labels or tags or addressing directly onto packages such as cartons. Weber says that the carbon coating of the stencil itself eliminates the need of a separate carbon sheet between the stencil and first copy of the form. It can be tabbed over the "ship-to" area of order-invoice or bill-of-lading forms so that as a label it can be prepared as a by-product of the form writing. Circle No. 20.

Air Driven Stapler

Eastener Corp. reports development of a new air driven stapler which is similar to its standard air plier in working principle and is especially designed for the stapling of corners of telescopic cartons, tops of heavy bags, corrugated inserts, and the like. Tripping the trigger releases the air pressure which pulls the anvil base up against the specially shaped nose of the plier just as the staple is driven. Fastener says that this action clinches the staple permanently in place. The unit operates on 50 to 100 lbs. air pressure and the stapling power is adjusted by regulating the air pressure. Circle No. 21.

Boilable Polyethylene

Clopay Corp. offers a new boilable polyethylene film, Spencer Hi-D. Clopay says this new film lends itself particularly well to applications where boiling or sterilizing is essential. Its properties are reported as being specially useful to food packagers and processors. Circle No. 22.

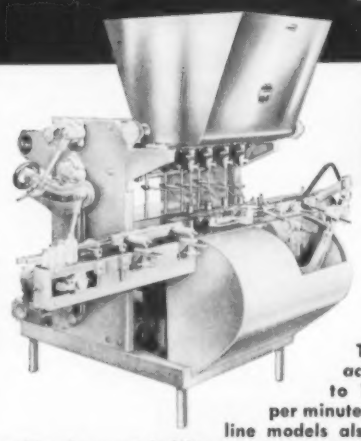
Coated Polyester Film

E. I. du Pont de Nemours & Co., Inc. announces availability of its Mylar polyester film with special coatings, which Du Pont predicts will permit wider application of this film for bags, overwraps, and vacuum packaging. Du Pont says that this polymer coated polyester film can be heat sealed on standard high-speed automatic packaging machinery with minor modifications. The producer also says that increased impermeability to moisture and gases is provided by the coated film, in addition to heat sealability. Circle No. 23.

Automatic Counters

The Faymus Div. of Bankers & Merchants, Inc. announces availability of its line of Tally-King counters, designed for continuous operation on packaging machinery, printing presses, molding presses, and similar high speed equipment. Its Model No. TK-4, available in ratchet or revolution type, counts up to 99,999 at speeds up to 2,000 counts a minute. Other models produce total counts from 9,999 down to 99. Features of these counters include easy mounting on machinery, white numerals on black background for visibility, and knurled knobs for re-setting. Circle No. 24.

Immediate Savings . . . WITH



ESTABLISHED Hope SINCE 1908

TYPE 19A

The 4 line model *accurately* fills 50 to 100 containers per minute . . . 6, 8 and 10 line models also available capable of *accurately* filling up to 250 containers per minute. Hope Type 19S Filling Machines are now in *profitable* use from coast-to-coast filling liquids, semi-liquids or viscous products in jars, plastic bottles or tin cans. For high speed, accurate filling machines look to the leader —

Write for catalog of our complete line

HOPE MACHINE COMPANY
9400-80 STATE ROAD • PHILA. 14, PA.

SOLVE YOUR Packaging Problems with LERMER PLASTIC CONTAINERS!

Example:

E. R. Squibb & Sons desired a container which would dispense just one capsule at a time. LERMER engineers developed such a dispenser in record time . . . at a price far lower than thought possible.

Write for complete catalog.

LERMER Containers are:
- shatterproof, assuring long life.
- 75% lighter than glass, effecting enormous savings in shipping.
- available clear or opaque in a multitude of lustrous colors.
- can be handsomely decorated and printed during manufacture to carry your story.

LERMER PLASTICS, INC. 540 South Ave. Garwood, N. J.

REPRESENTATIVES IN THESE CITIES: Rochester, Philadelphia, Memphis, Miami, Cincinnati, Columbus, Cleveland, Chicago, Detroit, Minneapolis, San Francisco, Los Angeles.

PIONEERS AND SPECIALISTS IN PLASTIC CONTAINERS

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Circle No. 245 on Card

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1. Beneath each announcement is a code number. As you select items on which you want more information, *note* this number.
2. Now, *circle* the corresponding numbers on the postcard, located inside back cover.
3. Next, *fill* in your name and address.
4. Then, *mail* the card — we pay the postage.

Styrene Film & Sheeting Fabrication

Monsanto Chemical Co. offers Technical Service Bulletin No. 2322. It describes Polyflex 100 styrene sheeting, providing helpful suggestions for cutting and slitting this transparent, hard surfaced material from roll stock. Names and addresses of 28 suitable slitting and sheeting equipment manufacturers are listed. Circle No. 101.

Straight Line Labeler

Economic Machinery Co. Bulletin CM-264 lists detailed specifications for its straight line labeler. Equipped with a "no bottle-no label" control, this machine can apply one, two or more labels on any glass container within a speed range of 70 to 240/min. Circle No. 102.

Humidification Equipment

Bahnson Co. Bulletin 104 lists features of six models of humidifying equipment. Water and steam units are shown. Humidifiers help maintain proper moisture content in paper, film, and board, and eliminate static electricity, thus increasing production and reducing waste. Circle No. 103.

Rotary Heat Sealers

Doughboy Industries, Inc. offers an illustrated folder on its heavy duty rotary sealer for cellophane, glassine, moisture barrier materials, foils, coated papers and the like. Halftones and line drawings illustrate sealing details, equipment features, and types of bag top folders. Specifications and machine features are set forth. Circle No. 104.

Styrene Packages

Dow Chemical Co. has a 24-page illustrated "Catalog of Packages" listing 170 different styrene plastic containers in a wide variety of sizes, shapes, and colors. The names and addresses of the molders of each package type is included. Circle No. 105.

Interior Packaging

Kimberly-Clark Corp. has a ten-page booklet illustrating and describing the use of its Kimpak in military packaging. Illustrations include actual military items being packaged with this material. Included also are recommendations in regard to meeting specifically enumerated governmental specifications. Circle No. 106.

Calendered Polyethylene Film

The Kendall Co. has a data sheet on Polyken Linear polyethylene films. This material has high orientation and tensile strength, as well as better gas vapor properties, and a higher thermal threshold than standard extruded polyethylenes. Specifications and packaging uses are provided with a table of physical properties for each of five grades. Circle No. 107.

Straight Line Labeler

Pneumatic Scale Corp., Ltd. Bulletin 116 illustrates its direct transfer bottle and jar labeler. This machine features a suction pad label pick-up that passes a glue applicator and then deposits label on the container. This unit incorporates "no bottle-no label" and "no label-no glue" devices. Circle No. 108.

Molded Pulp Packages

Keyes Fibre Co. illustrates several examples of molded pulp packages in a current bulletin. Molded into custom designed shapes for interior packaging, this low cost material reduces shock and abrasion to such products as fruits, ceramics, glassware, delicate instrument parts, etc. Circle No. 109.

Gravity Fillers For Petroleum Products

Horix Mfg. Co. offers a line of petroleum products gravity fillers in an illustrated brochure. Machine fill motor oil, brake and cleaning fluids, anti-freeze, etc., in "F" type, sanitary, and cone top cans. Low or high speed units are available. Circle No. 110.

Aerosol Filling Service

Continental Filling Corp. has published a twelve-page brochure that tells a step-by-step picture story of its pressure packaging methods. Starting with formulations, through testing, quality control and production, this booklet is a pictorial plant tour of Continental's aerosol packaging service organization. Circle No. 111.

Accumulator And Bundler

Hayssen Mfg. Co. illustrated bulletin tells how savings can be effected by bundling unit packages together in film or paper wraps, eliminating the need for intermediate cartons or bags. Labeling and imprinting units are available for use with this equipment. Circle No. 112.

Heavy Duty Portable Sealer

Packaging Industries makes a heavy duty portable heat sealer designated as Model 6 in a current bulletin. This unit is designed for sealing light and heavy duty coated or laminated barrier materials. Sealing jaws are 6" long by ½" wide and are air-operated. Dwell-time is adjustable from 1 to 10 sec. and controlled temperature ranges from 200 to 500 degrees F. Circle No. 113.

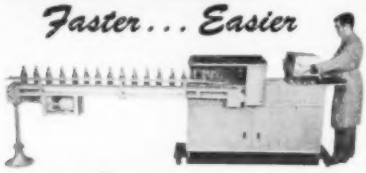
Twin Piston Filler

Elgin Manufacturing Co. offers a data sheet on its twin piston filler. This machine is compact in size and is adapted to use in both large and small plants filling a broad range of products, from liquids to heavy foods. Circle No. 114.

Rust-Inhibitor Paper

UNSCRAMBLES REGULAR AND ODD SHAPES

Faster . . . Easier



ISLAND STRAIGHTLINE UNSCRAMBLER

SPEEDS UP PRODUCTION

• Cartons or cases of bottles, jars, or cans dumped on table are instantly unscrambled and regimented into a single file to keep a continuous flow of units on your production line. Reduces labor costs . . . minimizes breakage . . . saves floor space . . . and meets all sanitary specifications as operator does not handle mouths of units.

ARE YOU CHANGING TO GLASS?

Send for Bulletin ST-1 and learn why there are twice as many ISLAND Styl-O-Matic Unscramblers in use than all other makes combined, and how they are used to unscramble practically every type of container imaginable.

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27-01 Bridge Plaza North
Long Island City 1, N. Y.

Please send full details on the Styl-O-Matic Unscrambling Tables as described in Bulletin ST-1

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ADDRESS_____

CITY_____ STATE_____

Circle No. 246 on Card

Ellisco

S·E·A·M·L·E·S·S CANS

MAKE ATTRACTIVE, ECONOMICAL PACKAGES FOR YOUR PRODUCTS

easy-to-use-ship-store

Deep Style 22, Also, Flat Style 12
Lithographed Cans for Tape and Other Products
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Screw Top Style C6
Flange Top Style G3 for hermetic sealing

Some of the many ELLISCO Seamless Cans available are shown. They are **light weight, made of one piece, unbreakable**—ideal for packaging many products, for laboratory use and for handling and storing small parts. Capacities: 1/16 oz. to 16 oz. Also many sizes and styles of seamed cans available. Write, wire or call us with your can packaging problem. Ask for Bulletin 116.

GEORGE D. ELLIS & SONS, INC.
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Circle No. 247 on Card

The Cromwell Paper Co. has a Technical Bulletin No. 655 which explains the characteristics and uses of "Ferro-Pak". This is a rust-inhibitor paper that is impregnated with a chemical that retards the corrosion of iron and steel parts due to moisture and oxygen. It is made to conform to MIL-P-3420. Offering protection of from six to twelve months in indoor storage, these papers may be corrugated or can be applied to cellulose wadding or to moldable materials; it is also available in bags, pouches, or sacks. Ferrous metal parts and machines can best utilize this material as a packaging component. Circle No. 115.

Automatic Capping

Consolidated Packaging Machinery Corp. has a six-page bulletin illustrating and describing eight different models of automatic equipment. Halftones of actual installations and a list of users accompanies the descriptive text and general machine specifications. Circle No. 116.

Plastics For Packaging

Bakelite Co. 1957 Condensed Reference File lists details about the basic plastics made by this company, such as polyethylenes, styrenes, and vinyls. It includes background data on these materials, reviewing their chief characteristics and indicating their applications. Circle No. 117.

Moisture Absorbents

Culligan, Inc. has published a product information bulletin about "Humi-Sorb," a desiccant for protecting packaged perishable products against moisture. Such products include pharmaceuticals, cereal, crisp baked goods and confections. It tells how to select the correct amount of this material for a specific application and describes "Humi-Sorb's" chemical and physical properties. Circle No. 118.

Static Eliminator

United States Radium Corp. has published a data sheet, "Eliminating Static in Industry". It explains how the Ionotron Static Eliminator ionizes the air in the vicinity of an electrostatic charge, thus bleeding off the charge. It eliminates the danger of sparking and fire and increases production when running glassine, acetate, Mylar, etc. Circle No. 119.

Bag Maker — Filler — Sealer

Hudson-Sharp Machine Co. brochure describes its new "Campbell-pak" machine. It converts thermoplastic film roll stock to heat sealed bags for sequence packaging of powders, granulars, liquids and solids. Three models produce bags from 1" to 14" wide by 2" to 20" deep, at speeds up to 40/min. Circle No. 120.

Contour Packaging

Plastic Artisans, Inc. offers an eight-page brochure showing a wide variety

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Corrugated Containers
$10,000 to $15,000

We have been retained by the Executive Vice President of a large and extremely aggressive Mid-western corrugated operation to aid in the selection of a top flight Sample Design Engineer.

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Paper Industry Consultants
6 E. Monroe Chicago AN 3-1970

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One-man versatile OLIVER saves your packaging dollars

The Oliver handles a wide range of package sizes. Its one-man operation and quick-adjustability speed production. The Oliver wraps many products: paper specialties, textiles, baked goods, meats, and products only remotely similar. It wraps them neatly, securely and rapidly. Using modern wrapping materials it heat-seals or glue-seals your package for utmost protection. A colorful diecut label can be heat-sealed to package. Infeed conveyors in various lengths. An electric eye registers printed wrappers. Choose from 8 models—speeds up to 50 a minute. Even with short runs and frequent changes, down-time is low. Write for details.

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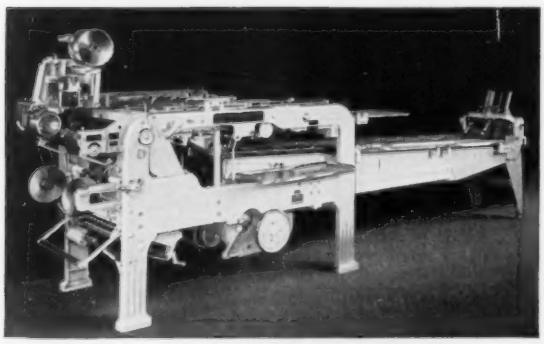

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Circle No. 251 on Card

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Here's the latest idea in sealing cartons . . . the DIAL-TAPER. You dial the length of tape and the DIAL-TAPER does the rest automatically . . . measures tape accurately, moistens tape with warm water and cuts off clean.

Users report "up to 50% saving in TIME, 25% saving in TAPE, plus stronger, neater package. Tape sticks tight with one pass of the hands." Used by U. S. Government, Ford, General Electric, all types of business.

For free booklet DT-5 write to Marsh Stencil Machine Company, Belleville 34, Illinois. T-23

of its transparent dome packages which are available in small quantities from standard stock molds, and from custom designed molds in minimum quantities of 50,000. This type of package is particularly adapted to the visual display of odd-shaped products. Circle No. 121.

Packaging Tapes

Permacel Tape Corp. makes both cellophane and acetate fibre pressure sensitive tapes. Their packaging applications are reviewed in a current four-page brochure, which also includes technical data concerning their adhesion, tensile strength, elongation, caliper, and roll lengths. Circle No. 122.

Plastic Films

Celanese Corp. of America has published a booklet, "Plastic Films — Acetate — Polyethylene". It describes these materials in detail by type available, their characteristics and applications. Included are tables showing mechanical properties and gas and water vapor transmission rates, etc. Circle No. 123.

VPI Wrap

The Marvellum Co. describes its VPI Wrap in an eight-page bulletin. This is a rust inhibitive packaging paper that prevents corrosion of ferrous metal parts. It eliminates the need for applying a protective oil coating and saves the cost and trouble of cleaning parts before use. Circle No. 124.

Cushioning

Armour Curled Hair Div. lists advantages of "Hairflex" for instrument packaging in an illustrated bulletin. This is a rubberized hair cushioning material that is custom molded to your product. It is re-usable, highly resilient, moisture and fungus resistant, and non-abrading. Circle No. 125.

Pharmaceutical Bottle Sealer

Arenco Machine Co. has a folder describing its "Capsolut Universal," a hand operated metal cap sealing unit for bottles and vials carrying sterile solutions, tablets, pills, etc. It also seals aerosol bottles. The sealing device can be quickly changed to accommodate caps between 8 mm. and 45 mm. diameter. Possible with this machine are 800 to 1,500 seals per hour. Circle No. 126.

Contract Industrial Packaging

Specification Packaging Engineering Corp. has a brochure which explains the background and facilities it offers manufacturers of difficult-to-package industrial products. The company packages a wide variety of items from vacuum tubes to electronic computers, and from instrument bearings to 30-ton hydraulic presses. Complete files of military specifications are maintained and a warehouse is available for the convenience of its customers. Circle No. 127.

Film Roll Handling

The Film Div. of American Viscose Corp. describes a pipe rack for handling rolls of packaging films in a recent news bulletin. Rack is designed to eliminate roll end scratches, nicks, and gouges. It is made of 2½" pipes that extend horizontally from a vertical steel structure which is mounted on a flat weighted bottom with runners. Slit rolls are slipped onto pipes which are spaced far enough apart to prevent contact of one roll with another. Circle No. 128.

Foil Paper, Board

The Gummed Products Co. has a sample booklet that includes swatches of eleven of its laminated foil papers and boards. These are available in a wide range of standard and special colors with special types of gumming, including heat seal properties. Circle No. 129.

Cast Vinyl Film

The Bakelite Co. has a new booklet, "Krene Cast Vinyl Film". It demonstrates, with a sample, the clarity and toughness of cast vinyl film and summarizes its uses and properties in twelve formulations. Technical data is included on tensile and tear strength, elongation, and chemical resistance of this material. Degree of clarity and moisture and gas imperviousness are shown in graph form. Circle No. 130.

Paper Bag Closers

George H. Fry Co. describes the new Model GS54 bag closing machine in a four-page bulletin. Designed to handle square, flat, or gusset paper bags, or plastic lined and coated bags, this unit can heat seal, single or double fold, and glue bag tops. Belt speeds range between 300" to 600"/min. The machine uses fast setting water soluble adhesives and is shipped completely assembled. Circle No. 131.

Plastic Fitment Applicator

Resina Automatic Machinery Co., Inc. has an information sheet describing the Model SA plastic fitment applicator. This machine can operate either independently or with a screw capper. It selects and applies perforated plastic fitments of varied sizes. It also handles the solid type of fitments with side tabs commonly used in the drug and pharmaceutical fields. Circle No. 132.

Oil & Grease Resistant Paper

Thilmany Pulp & Paper Co. has a demonstration kit to show the oil and grease resistance of Thilco Repel paper. The kit contains samples of ordinary kraft paper and Thilco Repel paper and capsules of oil, enabling you to see in your own office the performance of this new paper. Circle No. 133.

Plastic Fitting For Drums

Upressit Products Corp. describes the new "Polly-Press" 55-gal. drum fitting in a four-page bulletin. Comprised of a threaded insert which is pressed into drum flange, a threaded plug and a metal tamperproof seal, it can be applied easily by packers and reconditioners. It is easily removable for refinishing operations. Circle No. 134.

Humidity Control

American Instrument Co., Inc., Bulletin 2273 describes the Humistat. This is a new, sensitive electronic switch that starts or stops humidifiers, dehumidifiers, and other air conditioning apparatus to maintain preset humidity levels. Four types of this instrument are illustrated, as well as optional accessories. Circle No. 135.

Fluted Trays

American Rondo Corp. offers a brochure that outlines the characteristics, applications, and economy of a protective packaging innovation; fluted trays. These packages are made of light weight paperboard that is formed into rows of consecutive flutes which serve as nests for fragile products. These trays are available in a variety of styles and with a wide choice of cover flaps. This type package is designed to cushion against shock and is well suited to the packing of electronic tubes, hypodermic needles, ampules, crayons, etc. Circle No. 136.

Teflon Tape

The Connecticut Hard Rubber Co. offers an information sheet describing "Temp-R-Tape", a pressure sensitive Teflon tape. When applied to working surfaces of packaging machinery, the non-stick surface speeds heat sealing operations and package movement through equipment. It is easy and inexpensive to replace. A price list is included. Circle No. 137.

Versatile Wrapper

Package Machinery Co. describes Model Universal 6 wrapping machine in a current bulletin. Featuring a self-measuring paper feed which cuts off the correct amount of wrapping material for each item, this machine can produce up to 40 pkgs./min. This machine wraps goods on flat cards, trays, or in cartons within the following size range: 4" to 16" long, 2" to 9½" wide, ⅜" to 5¼" high. Circle No. 138.

Tablet Counter

The Lakso Co. Inc. has an information sheet describing the new "48" Tablet Counter. This machine counts and fills from 45 to 100 bottles of 100's/min., and is completely adjustable for tablet thickness. The unit is furnished on a portable table and uses a floor space measuring 27" by 42". Circle No. 139.

Piston Fillers

The Filler Machine Co., Inc., Bulletin "fa" gives specifications and illustrates its line of piston fillers for handling semi-liquids and semi-solids. These machines offer a speed range from 40 to 200/min., filling containers of 4 oz. to gallons. Circle No. 140.

Semi-Automatic Labeler

Long and Co., Inc. has published an information sheet describing the Atlantic Labeler. This unit will handle bottles, cans, aerosols, and drums from 2 ozs. to 5 gals. It features an automatic label feed, gravity container feed, and applies either spot, or complete wrap-around fully gummed labels. Circle No. 141.

Water-Resistant Bags

Jet-Pak, Inc. has a four-page brochure on its water-resistant book bags. These bags come in stock sizes ranging from 7½" by 12" to 14¼" by 20". Circle No. 142.

Roller Gear Drives

Ferguson Machine Corp. offers Bulletin 107A describing its line of small "E" Series roller gear drives for precision indexing of machinery and instrumentation. This bulletin gives load ratings and dimensions for 19 standard units with from 3 to 12 stops and indexing periods of 120-, 180-, and 270-degrees. Information of an engineering nature accompanies the text. Circle No. 143.

Plastic Foam Production

Gabriel Williams Co., Inc. offers a four-page brochure describing its Klauder Williams foam machine designed for the low cost production of polyurethane plastic foams. Details of the foam and its uses, as well as its characteristics and the operational details of the machine itself, are included. A technical data sheet is part of the brochure. Circle No. 144.

Epoxy Based Resin

H. B. Fuller Co. offers technical bulletin RTB-64S which describes its two component Resiweld Plastic Alloy, a new epoxy based resin used in the assembly of metal containers. Fuller says that its new material resists sag or flow during application and can be applied to vertical surfaces. Because of its ability to adhere to all metals and most non-metals, this alloy allows various materials to be used in packaging, the producer notes. Circle No. 145.

Packaging Dip Tanks

D. C. Cooper Co. has a folder showing its tanks for military preservation and packaging and also offers detailed folders on each of these twelve. These items include dip tanks, metal parts washers, dipping baskets, conveyorized machinery, electric wax pots, and a variety of other tanks

For Your Products

Among the wide range of shapes, sizes, closures, and colors we now produce, there's one that will fit your needs—*without* mold costs.

Jewel-colored Clearsite containers are moisture-tight, dust-proof, easy to multicolor print. Because they are shatterproof, they minimize breakage cost—their lightweight means lower shipping charges. For full details address Dept. P.

Clearsite

CELLUPLASTIC CORPORATION

Sales and Executive Offices • Newark, N. J.

used in military packaging processes. Circle No. 146.

Packaging Cost Reduction

Hinde & Dauch offers Booklet No. 5 of the 14th edition of its Little Packaging Library. Entitled "How to Ship More Economically in Corrugated Boxes," this 24-page publication includes information on the designing, testing, and storing of product packages. It also enumerates case histories, pointing up cost savings through use of specific corrugated box designs. Circle No. 147.

Injection Molding

Lester-Phoenix, Inc. offers its Bulletin No. 202, a brochure describing in detail the features of its molding machines. This literature contains a chart of specifications of all Lester models, a list of users, and information on typical installations, as well as cutaway views of basic components. Circle No. 148.

Interior Packaging

Paper-Wood Specialties Co. offers a new brochure on its interior packaging for industrial applications, such as electronic components, hardware, pharmaceuticals, paper products, chemicals, plastic, rubber products, and the like. The brochure discusses savings and results attained by bulk shippers using its low-cost, lightweight interiors instead of heavier, higher-cost materials. Circle No. 149.

Bond Tester

B. F. Perkins & Son Inc. has literature and operating instructions on its Perkins-Southwick bond tester, an adhesion tester for resin coatings. The producer says this unit accurately measures the degree of adhesion between air-impervious coatings and paper. It determines the degree of adherence of the air-impervious coating or ply to the porous or semiporous base. Circle No. 150.

Machinery Efficiency Recorder

Standard Instrument Corp. has a brochure and technical data sheets on its time recorder-totalizer. The device is used to monitor the operations of any machine, providing a chronologically marked tape showing time and length of every "on" and every "off" period of the equipment. The producer says it can be installed on machines or in remote locations, and may be modified to a counting device instead of a time-totalizer. Circle No. 151.

Feeding, Counting Hopper

U. S. Engineering Co. offers brochure B-31 describing its Hoppermatic unit for feeding, orienting, and counting up to 200,000 items per hour. This machine was previously known as the Feed-A-Matic. It handles parts ranging from screws, nuts, and bolts, through all kinds of hardware, to tablets, pills, and bouillon cubes. Circle No. 152.

Vibratory Feeder

Syntron Co. offers catalog data on its Model F-TO vibratory feeder, which has a trough size of 1½" x 12" and a feed rate capacity of up to 500 lbs. an hour of bulk material. Syntron says its new model utilizes the electromagnetic vibrating principle, which eliminates bearings, sprockets, chains, etc. It is 6" high by 15" long and weighs 10½ lbs. It can be incorporated into weighing and packaging machines. Circle No. 153.

Shock, Vibration Recorder

The Impact-O-Graph Corp. has a four-page folder illustrating and describing its impact, acceleration, and gravity recorders. These are self-contained units which make a record of mechanical impact, shock, vibration from any direction, and record these in terms of commonly used units of measurement. The folder illustrates six different models. Circle No. 154.

Automatic Butt Splicer

Champlain Co., Inc. offers a data sheet on its butt splicer for roll-fed press equipment, designed for splicing a new web of paper board onto an expiring web at high press speeds. The bulletin describes the splicer's cutting cylinders, web pull section, pasting cylinders, and single revolution drive. The unit is designed for in-line operation. Circle No. 155.

High Speed Counting

Richardson Scale Co. offers Technical Reference No. 56-C which describes two models of a new electric counter that records up to 200 counts a minute. Richardson says these remote counters accurately count boxes, cartons, packages, or individual objects as produced or as conveyed past a checking point. The literature describes their operation and use. Circle No. 156.

Corrections re: Finding the package costs of manual filling operations

The following corrections have come to light in regard to the article on finding the package costs of manual filling operations, which appeared on pages 23-26 of the March, 1957 PACKAGE ENGINEERING. In considering these corrections it is important to note that there are two possible bases of calculating the package costs. Some may prefer to use the figure of 8.0 hours as representing a day's work for one person. On the other hand, it is suggested that the actual labor cost may be in terms of 7.5 hours rather than 8.0 because of the fact that these employees only work 7.5 hours a day, even though as 7.5 hours instead of 8.0 hours.

As printed, the text on page 25 shows 0.00562 worker-hours per unit package. This should be 0.00769. The actual filling cost per dozen appears in print as 0.04652 worker-hours per dozen. The correct figure should be 0.04752.

It is also correct to estimate the labor-hours per package as 0.0082, as well as 0.00769. The difference is due to counting the actual labor cost as 7.5 hours instead of 8.0 hours.

Regarding the figures for the scallop line (which appeared on page 26), the correct figure should be either 0.004 or 0.00427, instead of 0.0035 as shown. The figure 0.004 is correct when calculated in terms of an 8.0 hour labor use. However, those using a labor factor of 7.5 hours will find that 0.00427 labor-hours per unit is a correct figure.

Elaborating on the question of fish stick packaging, an average speed of 52 a minute gives 3120 units per hour. Twenty-four worker-hours produce these 3120 packages. Hence, one package requires 24/3120 or 0.00769 worker-hours. On the scallop line, 12 worker-hours produce 3000 units. Therefore, one unit requires 12/3000 or 0.004 worker-hours.

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How to address Package Engineering:

Our executive and editorial offices are located at:

1791 West Howard Street, Chicago 26, Illinois

Please address all correspondence to us at our Chicago address, including queries about circulation.

CLASSIFIED ADVERTISING

Our classified advertising section is intended for use by those wishing to buy or sell used packaging equipment, to employ packaging personnel, seek such employment, offer or seek business opportunities. It is not available for general advertising. Terms: Cash with order. Rates: Up to 60 words, $10.00. If boxed, $20.00. Up to 120 words, $20.00. If boxed, $40.00. Up to 180 words, $30.00. If boxed, $60.00.

Circulation this issue in excess of 35,000

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For Sale — Packaging machine, Battle Creek Model BT30 and Bond M L Dual Filler. Fills, seals folding boxes, both bottom and top. Continuous flow principle. Quickly convertible. Wide range of boxes up to 10 inches in height, 30-40 per minute. Price new machine $15,120.00; this used one $5,000.00. Reply to W. J. Wittekind Company, 1041 Richmond Street, Cincinnati 3, Ohio.

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What we think

"How do we justify our existence?" Apparently this is one of the most important questions facing the packaging engineer speaking either for himself or on behalf of his department. In other words, just how do those responsible for technical and operational packaging win the support of top management for their efforts?

The American Management Association recently devoted a three-day packaging clinic to the subject of the packaging engineer and his responsibilities. One of the speakers at this meeting set forth a very significant idea — one that is to receive increasing attention as time goes along. This man has charge of the staff packaging function for a major producer of a diversified line of consumer products.

Dollar savings not the real measure

"Do not try to justify your existence on the basis of money you save for your company," he told his audience, noting that other benefits appear to be far more significant. We think he has something.

One of the reasons underlying our support of his view is that any number of capable men who have attained remarkable savings for their respective companies seem unable to impress management with the import and significance of these savings. We know of one man who saved his company over half a million dollars in one year or so. His reward was a brief notation of thanks and a modest boost in his annual bonus (involving just three figures).

Since there seems to be no lack of articulate reporting as such, the inescapable conclusion is that management does not attach to these savings the same significance that the packaging engineer does. Perhaps the real fault is that the packaging people do not translate these savings in a form which busy top management may grasp immediately.

Overriding benefits are intangible

The heart of the issue is that less measurable items are more important than the dollar savings themselves. In this connection our speaker at the AMA clinic noted that other benefits appear to be of greater importance. These include better manufacturing operations, better procurement of packaging materials and the like, and even a certain insurance against packaging blunders that arise all too often in the course of even the most well managed operation. The trouble is that these things are largely intangible. It is extremely difficult to talk quantitatively about a "smoother" operation, for example.

So it appears that here is a major piece of unfinished business for the packaging engineer or package engineering department: How to sell top management the value of all these intangibles. In one sense, you balance the price of a package engineering operation against the cost of what might have happened if there had been no such operation.

We must develop new yardsticks

Since the inability of packaging people to get much of a rise out of top management on the basis of dollars saved is evident, the obvious conclusion is that it will take something more to give management an adequate understanding and evaluation of the package engineering function. Thus, the critical question becomes that of just how to interpret an intangible to those whose usual yardsticks are fiscal in character.

There is no categorical answer because it varies from company to company. Some packaging experts translate their savings and efficiencies into terms management readily grasps, such as money borrowed without interest, or capitalization that otherwise would have been necessary, or volume of sales necessary to produce a comparable amount of profit. We think their success in translating these things to management is laudable but the main question still remains unanswered — what about the intangibles?

No shortcut: Keep up the search

Perhaps there is no magic windshield wiper that scrapes away the curtain of mist between the packaging experts and their top management. It may take months and years for the professional package engineering people to instill in their managements an impression of their competence to solve technical packaging problems advantageously to the company. Even so, we emphatically urge more and more attention to a search for that vital articulate translation. Packaging can never really come into its own until top management appreciates its possibilities to the fullest.

Bruce Hollingsworth

Editor

CASE HISTORY:

Stokes & Smith - 'EG' Filler
C. W. Antrim & Sons, Inc.
Richmond, Virginia
Packers of "Old Mansion"
brand spices

Rapid changeover increases daily output of short production runs

One simple adjustment on the scale beam changes the net fill to the desired weight, accurate to within 1/16 ounce plus or minus per pound. This adjustment is made by the operator without moving from the filling station.

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In addition to these advantages, Mr. R. H. Cardwell, Jr., of C. W. Antrim & Sons, Inc. also reports, "We can fill spices directly into a prefabricated bag which is then inserted in a rigid container. With a minimum of adjustment, a flip of a switch, we can change over to pressure pack filling or gross weighing directly into containers. The auger-type mechanism delivers a constant, smooth flow when handling either free-flowing or oily spices. Four point lubrication is all that is required because the 'EG' is electrically controlled, reducing mechanical parts to a simple belt drive and shaft instead of a complicated, hard-to-maintain mechanism."

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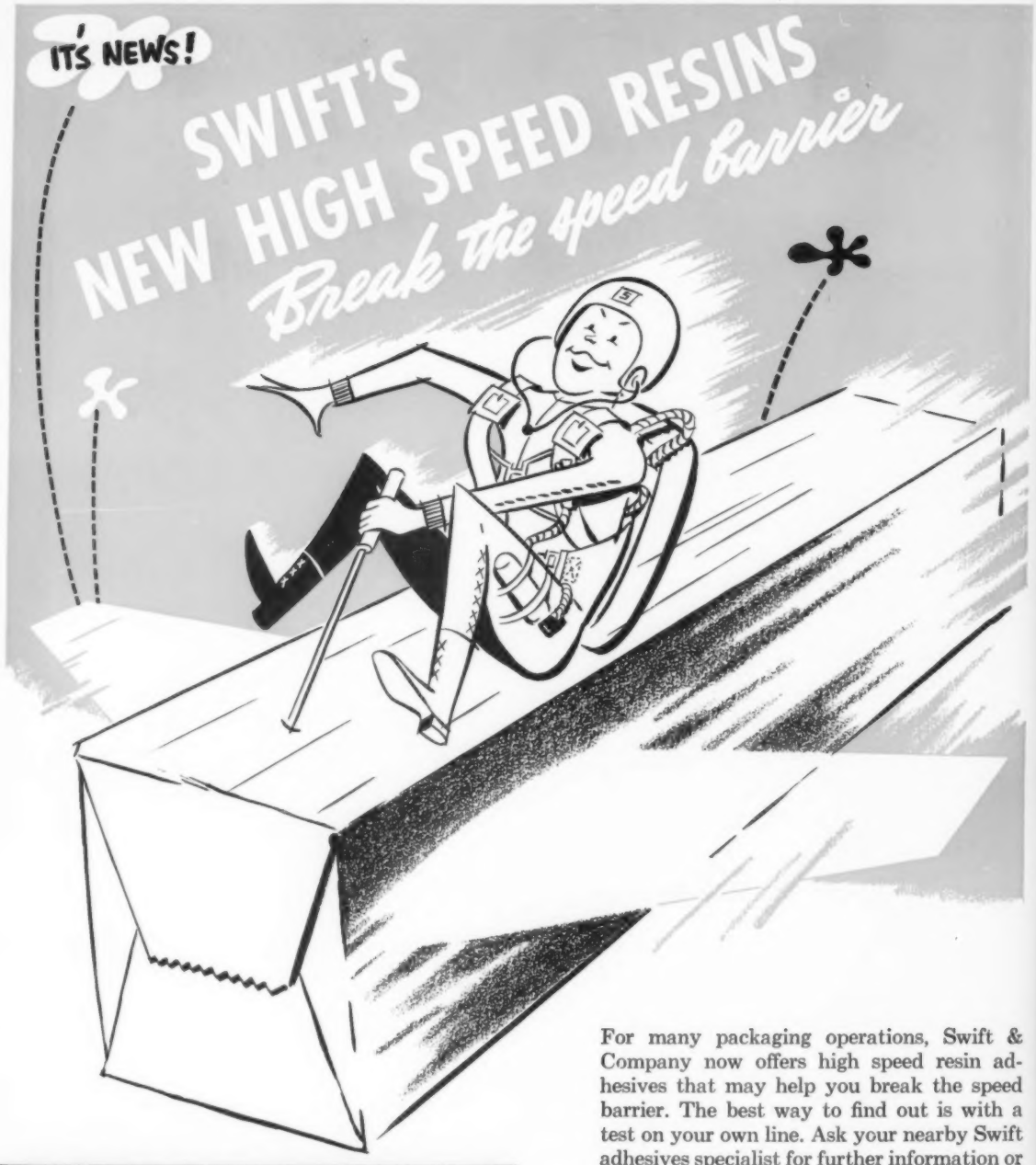

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